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National Veterinary Medical Association of Great Britain and Ireland.

FIFTY-THIRD ANNUAL MEETING, BELFAST, 1935.

Presidential Address

BY

J. F. CRAIG, M.A., M.R.C.V.S.

Principal, Royal Veterinary College of Ireland

According to our Regulations the President is required to deliver an address at the termination of his year of office and at the Annual General Meeting. No indication is given as to the nature of the address, but presumably it is intended to allow him to give an account of his stewardship or to give vent to the reflections and impressions gained during the year. If that be what was the intention, then what I have to say will be very brief and I will not detain you long.

In the first place I should like to express my high appreciation and thanks for the honour you have done me in electing me to the Presidential Chair for the past year. It is a great responsibility as well as a great honour to take a hand at the helm for a short time and to guide the good ship along a profitable if not a peaceful course, avoiding the rocks of dissension and barren controversy.

One of the hopeful signs of our organisation is the increase in its membership which is now a record. It has recently passed the seventeen hundred mark but the record is not one which cannot be exceeded. We have still a long way to go before the whole of the members of the veterinary profession in these countries are members of this Association and that is the goal to be aimed at. The larger the membership of the Association the greater will be its influence and when directed along the right channels, the greater its power for good.

As regards the work of the Association, you may have observed from the Annual Report that the Council and its Committees have been remarkably active during the year and I think it may be claimed with justice that much good work has been achieved and much has been accomplished which if not yielding fruit for the present, will later on bring material gain to the country and to the profession. Of course, it has to be admitted that differences of opinion do arise, and have arisen at times as to the right policy or policies to be adopted but they have never been so great that they could not be bridged over when discussions were entered into in the right spirit and there was an honest desire for the ultimate welfare of the whole of the veterinary profession or the profession as a whole.

One of the modern developments of this as of other professions has been the division of its members into Groups or Sections according to the particular spheres in which they are operating. Thus, we have now not only the general practitioner but also the whole-time veterinary officer, municipal and county, who is engaged in Veterinary Public Health work in the control of the production of milk, and the inspection of meat, the Veterinary Officer of the Ministry of Agriculture engaged in the control of certain scheduled contagious animal diseases and the Veterinary Research Worker.

With this diversity of spheres or division into sections there is the danger of a corresponding weakness in that it may result in a possible want of cohesion in the profession through the appearance of diverging interests. Veterinary Science tends to become viewed from different angles.

In the old days the dominant, if not the only sphere of the veterinary surgeon was general practice. He was concerned solely with the diagnosis and treatment of disease and the relief of suffering in animal patients. And one may add that the greatest section of the profession are still engaged in practice and this is likely to remain the pursuit of the large

majority. It is true that in some respects veterinary practice is changing and that more and more attention is being given to the prevention rather than the cure of animal disease. This tendency is a development of the principle that if a disease is preventible why not prevented. Veterinary research in its widest sense has contributed more than anything else to this change and that research has been concerned not only with contagious disease but also with affections related to dietetics, management and defective hygiene.

I am not one of those who despair of the future of the veterinary practitioner. The profession have had the way of adapting themselves to altered circumstances.

In spite of what may be achieved by the pursuit of veterinary research it must be admitted that animal disease and accident and various operations commonly performed on domestic animals will always remain in great measure to claim the services of the veterinary practitioner. It may also be that in the future when the public have become more conversant with his qualifications and experience, his services may more and more be called upon for the conservation of the health of animals as well as for the cure of disease.

One would naturally expect that the needs of veterinary practice would be in direct proportion to the animal population and it is interesting to note variations in the numbers of the different species bred and maintained as given in livestock statistics over a period of years.

I have looked up the statistics covering the areas represented by the Irish Free State and Northern Ireland over the last 50 years and compared those for 1880, 1912 and 1931:—

Irish Free State

	1880	1912	1931
Horses ...	425,858	487,271	449,697
Cattle ...	3,212,217	4,049,428	4,711,120
Sheep ...	3,341,297	3,466,406	3,575,379
Pigs ...	728,478	1,100,036	1,227,003
Poultry ...	10,701,673	19,140,819	22,782,229

Northern Ireland

	1880	1912	1931
Horses ...	120,510	112,299	94,279
Cattle ...	709,300	799,070	680,649
Sheep ...	221,166	362,423	793,834
Pigs ...	121,791	223,921	235,672
Poultry ...	1,588,678	5,196,493	7,649,400

What seems remarkable in looking over these statistics is the very small reduction in the numbers of horses over the last 50 years even in spite of the great increase in motor traffic and the corresponding reduction of horses on the streets.

Cattle have shown a considerable increase in that period in the area covered by the Irish Free State, while in Northern Ireland there has been a slight reduction. Sheep have increased in numbers in both areas and especially in Northern Ireland, while the numbers of pigs have increased in both areas. The largest increase has been shown by poultry, they are now more than twice as numerous in the Irish Free State and five times in Northern Ireland.

One would naturally conclude that the opportunities for veterinary practice could have correspondingly increased or that there was a greater need for skilled veterinary service. And when one looks back one finds that there has been a considerable increase in the number of veterinary practitioners in Ireland in that period.

I am not concerned at the moment with canine or feline practice because the call for practitioners in connection with disease or ailments of these animals is admittedly improving. but I am specially directing my attention to the type of general practice where the animals of the farm are the first consideration. And I think it can be claimed that the general services rendered by the practitioner are essential services from the point of view of the economic development and welfare of animal husbandry.

It has been stated that with the increase in the numbers of State, municipal, county and other Public Health appointments, veterinary practice has been reduced in its attractions and in its scope and that as a result graduates are tending to leave practice out of their purview because of its uncertainty, the irregular life it entails and its failing prospects.

The prospects of the general practitioner are inevitably bound up with the prosperity of agriculture, but that does not mean that the requirements of agriculture in that direction are correspondingly reduced by adversity. The problems of animal disease and animal welfare still remain and are not otherwise catered for by a skilled and trained body of veterinarians. It would be a calamity to the country and to the profession if general practice fell into disrepute and large tracts of country became deprived of the services of the veterinary surgeon. That course seems to me to be against the public interest and altogether a retrograde step. In no other branch of veterinary service is attention paid to such a wide field of animal disease and without it agriculture would have to resort to the employment of the knowledgeable man or the unskilled person.

Moreover, the general practitioner by reason of his more comprehensive clinical observations and experience can contribute largely to the advancement of veterinary science and be of great assistance in the solution of problems which are being studied in a specialised way

by other Departments. I am not one of those who think that veterinary science and veterinary research are wrapped up in one particular Department. Clinical observations as well as pathological and bacteriological studies and physiological, biochemical and other investigations must all be pursued if Veterinary Science is to come into its own. These reflections lead one to the view that the various branches of the veterinary profession, if they are to be expected to perform their proper functions, must be intimately interwoven so as to form a complete unit.

I have mentioned this point not with a view to minimising the importance of one particular branch of veterinary science but to show that each has its own part to play and must be allowed to make its own contribution.

The practitioner in the ordinary course of his work is not infrequently confronted with problems which also concern veterinary public health and State services. And it might readily be argued that before anyone can be efficient in specialised Departments he ought to have had a preliminary and even a prolonged experience of general practice. In this way he would obtain a more adequate idea of the nature of the specialised work which he may afterwards be called upon to pursue.

In order to co-ordinate the work of the profession in the control of certain cattle diseases and especially bovine tuberculosis, your Council adopted and advocated a scheme for the establishment of a Central Department of Animal Health in which whole-time veterinary officers as well as panels of veterinary practitioners in each county would play a part. This scheme has been circulated and has been discussed with the representatives of various Boards and if adopted would do much to maintain a sufficiency of veterinary practitioners for the general needs of agriculture.

In the event of a threatened general decline in the numbers at least two solutions to the problem have been suggested:—

(1) That a general State Veterinary Service be instituted for the general needs of animal husbandry. This is, however, not a form of control which would meet with general approval. It would tend to lead to irritating delays and restrictions too cumbersome to allow of the proper development and maintenance of general practice. A State-subsidised service without these disabilities would be of the greatest value to the poorer areas of the country.

(2) That a comprehensive national scheme of animal insurance be provided. This idea is an attractive one and has been advocated by one of our prominent members, *viz.*, by Professor Share-Jones. Such a scheme would be a form of protection to the largest and most important industry in the country and it would ensure proper supervision of the animal population in health and disease. Incidentally, it would bring to light the relative importance, prevalence, distribution and the extent of the losses from various animal diseases, information which is urgently required to give an idea as to the problems towards which veterinary research should be largely directed.

The scheme is one which is worthy of further investigation as to its economic application.

In its activities this Association has done much to further the claims and the interests of the veterinary public officers. Much of its energies has been devoted to conserving and improving the conditions of their service and in that respect it might be considered to be serving only selfish interests. On the other hand, this very action is already benefiting the community because in this way students of ability are attracted to the veterinary profession and are induced to specialise along the lines necessary to meet the requirements of this branch of veterinary effort.

There is the danger that as this Veterinary Public Health branch of the profession develops it may not consider in a sympathetic spirit its relations with other branches of the profession and does not realise what benefits have been derived and can yet be derived from its association with the Central body. These officers have no doubt special considerations of their own, but their numbers, even although they are rapidly increasing, must remain small and their influence must be correspondingly limited if they remain detached from the general organisation of the National Association.

I do not presume to say much in this address with regard to the question of veterinary research. One may, however, be permitted to mention that at no period in our history has so much support been given to the development of research throughout the world and even in this conservative country, which has for so long depended upon and relied upon the work carried out in other countries, a very wonderful advance has been made in our knowledge in recent years. It must not, however, be concluded from what I have said that veterinary research has yet been adequately provided with financial support and encouragement but rather that so far what support it has received has been more than justified by results.

This Association does not engage in veterinary research. It has limited itself to giving encouragement to the work so long as that work is concerned with the exploration of new fields and of clearing up obscure problems and obscure disease and is not confused with the diagnosis and treatment of affections which are well known to the practitioner.

And the National Association has, through the medium of its official organ, done much to disseminate the new knowledge gained in the field of research. Recently it set up certain committees which promise to do excellent work in reviewing the published reports of investigations which are of importance to veterinary science. I refer to the committees on Parasitology and Poultry Diseases. These committees can do very valuable work in making known to the profession any new work or knowledge in connection with these two subjects.

I cannot refrain also from referring to another committee which has almost completed its labours and is expected to issue a report in the near future. This is the committee on Small-Animal Euthanasia. At the present time public attention is being focussed on the humane treatment of animals and every now and again reference is made to alleged cases of cruelty in the destruction of animals.

It was felt that the profession, by the very nature of its calling, should be in the forefront in giving a pronouncement on what should be regarded as the most humane methods of destruction of the small animals.

This committee has made large numbers of observations on well-known methods of destruction and on methods which are less well known but regarded as painless, and they will soon be in a position to present their considered views of the respective merits of the different methods of euthanasia.

Mention is made of these activities of the Association to show that your Council is doing everything possible to attain the object for which the Association was founded and to be of service and interest to its members. I cannot conclude without paying a warm tribute to the work of the Council and the Standing Committees and of the various officers of the Association. It seems to me that the members of the Association are not fully cognisant of the amount of time and labour that are expended in their interests by their councilmen often at great sacrifice to themselves and without any likelihood of material reward. They are devoted to their work and their one desire is the advancement of the profession. They are often the subject of adverse criticism which is quite undeserved. If I was to select any committee for special tribute it would be the Editorial Committee, which has very frequent meetings and has the sometimes invidious task of controlling the pabulum which is served up to the members in the Association's Journal. These committees carry on the real and essential work of the Association.

Finally, may I be allowed to say that the Association is entirely in the hands of its members and they can make of it what they will. In these days of large organisations the veterinary profession will stand four square if united, but if disorganised, veterinary science and practice may become merged into channels which are not altogether unforeseen.

It therefore behoves the members to stand by their Association and to do what in them lies to enlarge its membership and take their part in its activities. One may repeat in this connection the last sentence of an editorial on the unity of the profession appearing in the *British Medical Journal* on July 13th: "It is important that every member of the profession should strengthen the hands of the Association as its recognised consultative and negotiating body, and by becoming a member take his full share in influencing or determining the policy to be pursued."

CONGRESS ATTENDANCE LIST

We give below the list of delegates, members and visitors who attended the Annual Congress of the Association at Belfast, 1935.

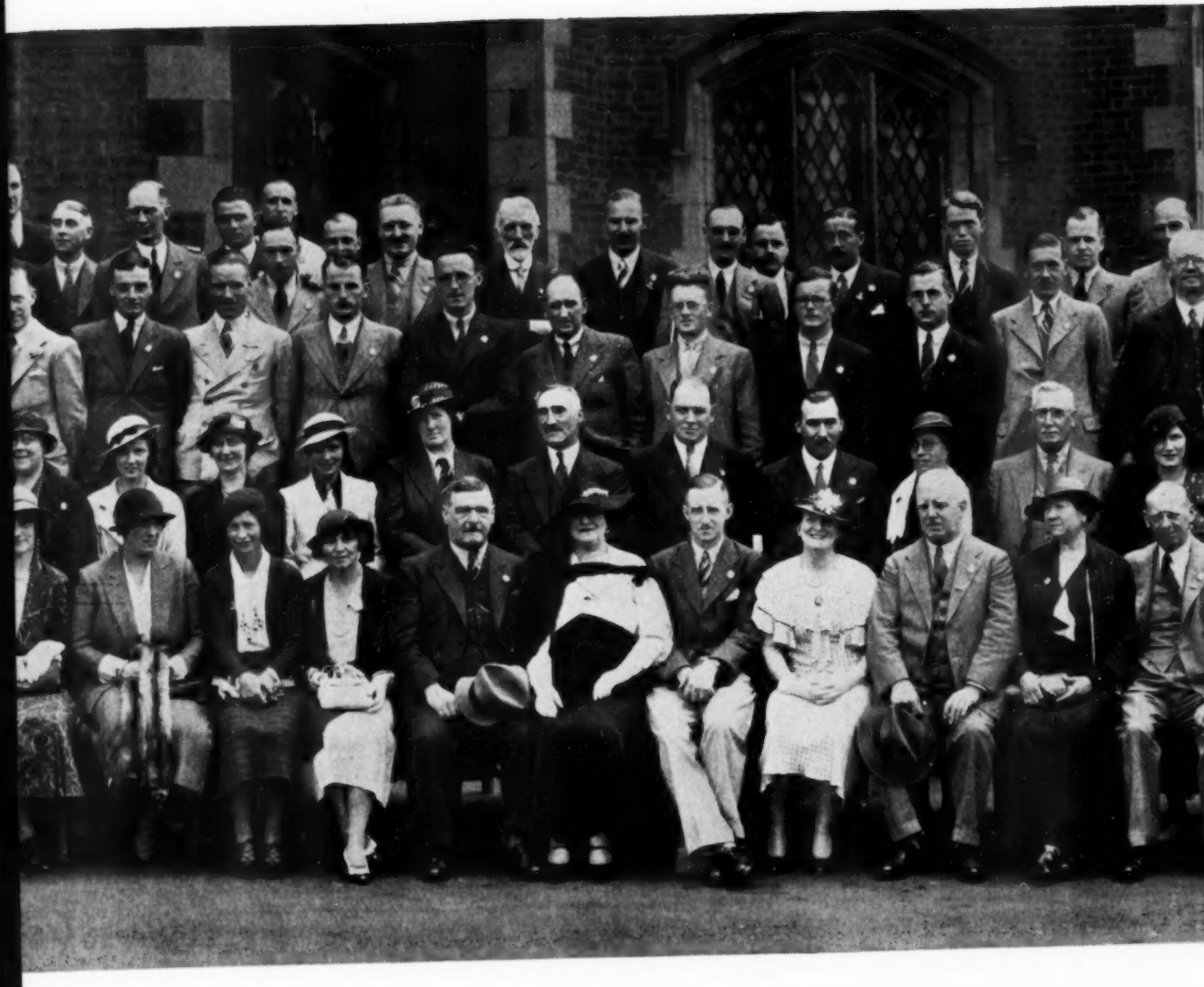
Every effort has been made to render the list complete, but inasmuch as it would appear that many of those who took part omitted to sign the attendance book, there are, inevitably, some omissions.

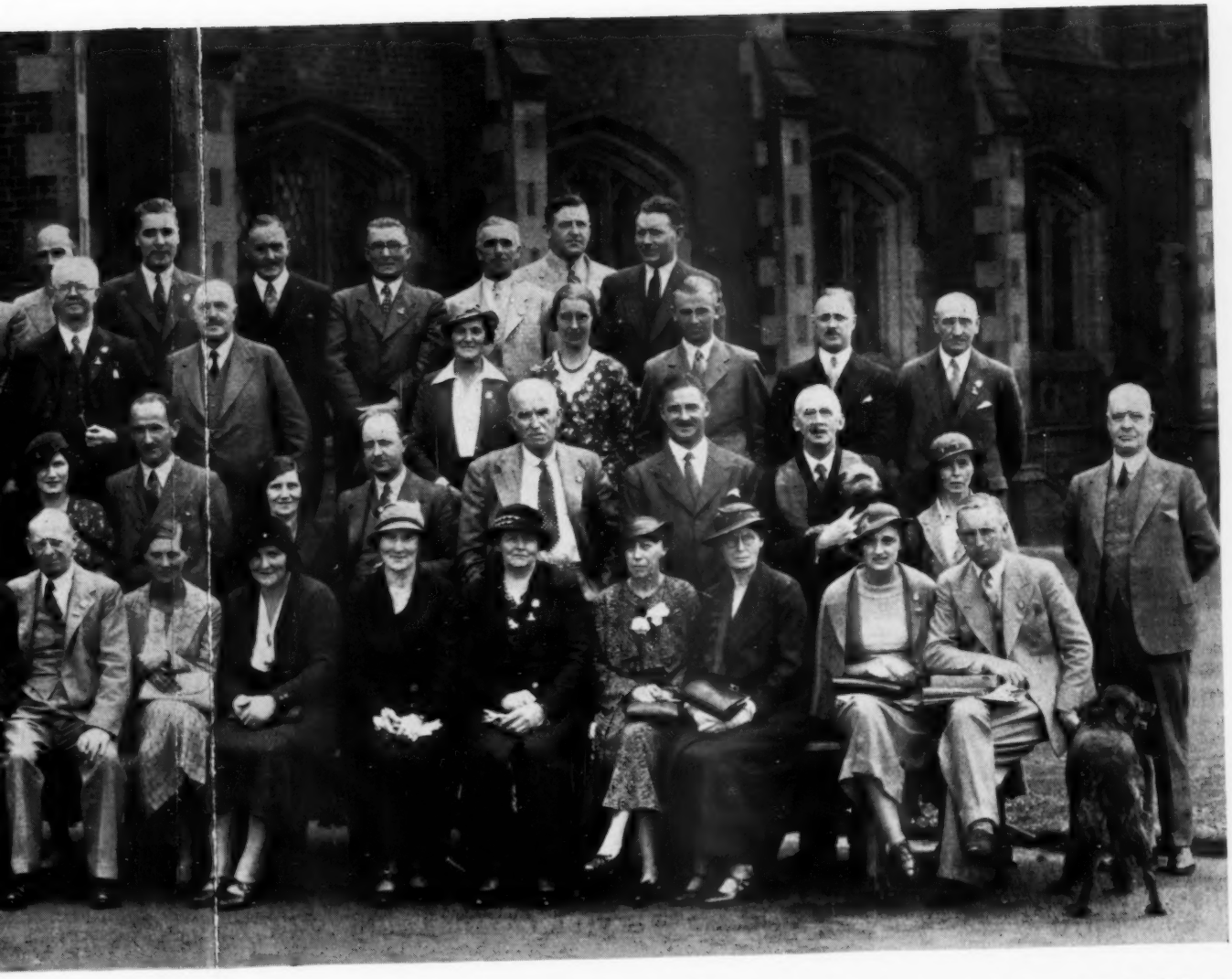
Members

Captain A. H. Andrew, Captain E. F. Angler, Mr. A. Barclay, Captain J. R. Barker, Mr. P. D. Baylis, Mr. H. Bell, Miss H. Bisset, Mr. H. W. Steele Bodger, Captain V. Boyle, Mr. J. A. Bradley, Dr. O. Charnock Bradley, Messrs. A. D. J. Brennan, D. Brown, John Brown, W. Brown, Professor T. G. Browne, Captain D. Campbell, Mr. R. W. Cassells, Mr. W. G. Clarke, Captain H. B. Collet, Major T. Dalling, Mr. F. J. Daly, Mr. G. O. Davies, Major Brennan DeVine, Messrs. N. Dobson, P. F. Dolan, A. A. Donnelly, K. D. Downham, W. Duncan, E. P. Edwards, Captain J. Fox, Captain T. Finch, Messrs. H. D. Gilmore, T. N. Gold, S. Gourley, J. C. Grant, Captain O. V. Gunning, Major J. Harrison, Messrs. F. W. Hart, F. T. Harvey, P. J. Howard, W. F. Howes, R. Hudson, Captain H. Tudor Hughes, Messrs. H. V. Hughes, J. H. M. Hughes, D. Imrie, D. S. Jack, J. Ewing Johnston, J. R. Kellett, H. C. I. Kelly, A. B. Kerr, W. R. Kerr, Major H. Kirk, Mr. R. S. Kyle, Mr. H. G. Lamont, Captain W. W. Lang, Mr. P. T. Lindsay, Miss B. L. Lock, Mr. G. H. Locke, Captain J. McAllan, Mr. A. McCaughan, Captain T. A. McClintock, Mr. J. H. McCrea, Mr. P. A. McGeady, Captain F. McKenzie, Messrs. D. F. McKinney, J. McQuaker, H. G. McShane, D. L. McWhirter, J. I. Magowan, C. Masson, H. T. Matthews, W. A. Milligan, J. M. Mitchell, Professor W. M. Mitchell, Mr. J. A. Mitton,

National Veterinary Medical Association Congress at Belfast, 1935.

1935.





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Dr. R. F. Montgomerie, Captain A. Monro, Mr. R. Moore, Captain S. J. Motton, Messrs. G. D. Munro, W. Nairn, T. F. Ranson, G. G. Rennie, W. L. Richardson, Captain J. R. Rider (Hon. Secretary), Messrs. J. N. Ritchie, W. J. B. Robson, R. J. Roe, J. E. Rosborough, P. L. Shanks, S. Sharp, Miss K. W. Shedlock, Mr. M. J. Sim, Captain R. Simpson, Mr. W. Simpson, Captain J. Smith, Messrs. A. Snodgrass, J. Stewart, R. Swaby, E. L. Taylor, Captain J. V. Tevlin, Messrs. G. H. Thomas, T. R. Thomas, J. Thompson, A. Thomson, Major C. H. S. Townsend, Mr. S. B. Vine, Captain P. W. Walker, Mr. C. V. Watkins, Captain A. H. Watson, Captain W. Watt, Mr. W. Welsh, Mr. E. G. Wood, Colonel W. A. Wood, Professor G. H. Wooldridge, Professor J. G. Wright, Captain A. Young, Lieut.-Colonel T. Dunlop Young and Mr. W. Jackson Young.

Delegates

Commonwealth of Australia.—Captain R. H. Heywood, B.V.Sc.

Ministry of Agriculture and Fisheries.—Captain W. G. Wragg, M.R.C.V.S.

Department of Agriculture, Scotland.—Mr. J. N. Ritchie, B.Sc., M.R.C.V.S., D.V.S.M.

Department of Agriculture, Irish Free State.—Mr. J. K. Norris, M.R.C.V.S., and Mr. P. A. Rogan, M.R.C.V.S.

County Councils :—

Ayrshire, Captain A. Douglas, M.R.C.V.S.; Breconshire, Mr. A. J. Cattell, M.R.C.V.S.; Dumbarton, Mr. A. McNiven, M.R.C.V.S.; Dumfriesshire, Mr. G. A. Sangster, M.R.C.V.S.; Durham, Councillor Wm. Kelly and Mr. H. B. Allan, M.R.C.V.S., D.V.S.M.; Essex, Captain F. W. Medlock, M.R.C.V.S.; Fife, Mr. J. C. Henderson and Major R. G. Anderson, O.B.E., T.D., F.R.C.V.S.; Glamorgan, Alderman Joseph Dicks and Captain J. Howard Jones, O.B.E., M.R.C.V.S.; Kirkcudbright, Rev. James A. Fisher and Captain J. Waddell, M.R.C.V.S.; Lanarkshire, Mr. John Weir, M.R.C.V.S., D.V.S.M.; Middlesex, Major R. C. G. Hancock, B.Sc., M.R.C.V.S.; Midlothian, Mr. W. D. Macrae, M.R.C.V.S., D.V.S.M.; Renfrew, Mr. A. M. K. McLeod, M.R.C.V.S.; Staffordshire, Mr. F. A. Davidson, B.Sc., M.R.C.V.S.; Suffolk, Mr. J. J. Gildea, M.R.C.V.S., D.V.S.M.; Surrey, Mr. E. Clark, M.R.C.V.S., D.V.S.M.; Sussex, Dr. L. Jordan, M.R.C.V.S.; Yorkshire (West Riding), Mr. R. S. Smyth, M.R.C.V.S., D.V.S.M.

City and Town Councils :—

Aberdeen, Captain G. Howie, F.R.C.V.S.; Belfast, Alderman J. D. Williamson, M.D., D.L., J.P. (High Sheriff of Belfast), Alderman Robt. Pierce, Dr. Chas. Thomson, and Captain A. McLean, M.R.C.V.S., D.V.H.; Cardiff, Mr. J. H. M. Hughes, M.R.C.V.S., D.V.S.M.; Glasgow, Councillor J. S. Ratcliffe, S. G. Abbott, M.R.C.V.S., D.V.S.M., and Mr. John Hamilton; Leeds, Councillor Beatrice C. Ives and Lieut.-Colonel J. A. Dixon, T.D., M.R.C.V.S.; Liverpool, Captain A. W. Noel Pillers, F.R.C.V.S., D.V.S.M.; Manchester, Councillor Howard, Mr. Austin Chadwick, Mr. W. K. Johnstone, M.R.C.V.S., and Mr. R. C. Locke, M.R.C.V.S., D.V.S.M.; Newcastle-upon-Tyne, Mr. T. Parker, F.R.C.V.S.; Paisley, Captain J. Andrew, M.R.C.V.S.; Preston, Major R. Finch, M.R.C.V.S., D.V.S.M.; Sheffield, Mr. W. Tweed, M.R.C.V.S., D.V.S.M.; Wallasey, Alderman D. P. Charlesworth and Mr. G. Tullis, M.R.C.V.S., D.V.S.M.; West Ham, Mr. H. E. Bywater, M.R.C.V.S.

Visitors

Mrs. Craig, Miss Anderson, Mrs. Archibald, Mrs. Steele Bodger, Dr. Fred Bullock, Mrs. Campbell, Mrs. Cassells, Mrs. and Miss Chadwick, Mrs. Comins, Mr. S. C. Currie, Mrs. Dolan, Mrs. Finch, Professor Frost (Cornell University), Mrs. Howard, Mrs. and Miss Jack, Mrs. W. K. Johnstone, Mr. J. A. Jones, Mrs. E. M. Kelly, Dr. and Mrs. Killian (of Somerdale, Mass.), Mr. C. O. Langley (Association's Solicitor), Mrs. Lloyd, Mrs. G. H. Locke, Mrs. McAllan, Mrs. and Miss McCrea, Mr. W. J. McIlroy, Mrs. McLean, Mrs. McNiven, Mrs. McQuaker, Mrs. Magowan, Miss Marshall, Mrs. and Miss Masson, Mrs. Matthews, Mrs. Montgomerie, Mrs. Motton, Mrs. Nairn, Mrs. Pollard, Mrs. Rider, Mrs. Roe, Mr. F. Russell, Mrs. Sharp, Mrs. R. Simpson, Mr. J. Smith, Mrs. Smyth, Mr. E. C. Sparrow, Mrs. Stewart, Mrs. Townsend, Mrs. Watson, Mrs. and Miss Wooldridge, Mrs. and Miss Wragg and Mrs. W. Jackson Young.

Total attendance recorded 227

Queen's University

OFFICIAL OPENING OF CONGRESS

Ceremony at Queen's University

The official opening of the 1935 Congress of the National Veterinary Medical Association of Great Britain and Ireland, held at Belfast from July 29th to August 2nd, took place in the Great Hall of Queen's University, Belfast, on Monday, July 29th, at 9.30 a.m., by the Lord Mayor of Belfast (the Right Honourable Sir Crawford M'Cullagh, Bart.) in the presence of members of the Association in academic dress, delegates to Congress, and lady visitors.

The President of the Association (Professor J. F. Craig, M.A., M.R.C.V.S., Principal of the Veterinary College of Ireland, Dublin) was accompanied on the platform by the Lord Mayor of Belfast, the Vice-Chancellor of Queen's University (Dr. F. W. Ogilvie), Dr. Scott Robertson (Secretary to the Ministry of Agriculture, Northern Ireland), Captain R. Simpson (Vice-President, N.V.M.A.), Captain J. R. Rider (Hon. Secretary, N.V.M.A.), Captain W. G. Wragg (Hon. Treasurer, N.V.M.A.), Mr. W. Nairn, Mr. J. Ewing Johnston and others.

The President said: Ladies and gentlemen, this is the Fifty-third Annual Congress of the National Veterinary Medical Association of Great Britain and Ireland, and of these Congresses four were held in Ireland, and the last one is now being opened in Belfast.

We have the honour at the opening meeting to have with us not only the first citizen of Belfast—the Lord Mayor (applause)—but also the Vice-Chancellor of this great University—(applause)—and they have come to offer you a few words of welcome at the opening of the Congress, so as to give it a good send-off.

I may say, with regard to the Lord Mayor, that he seems to be an institution in himself in Belfast. (Applause.) It appears to be a very formal ceremony to re-elect him from year to year, so that he must fill the post well. (Applause.) From our point of view he has been generosity itself—and we are not singular in that respect. We are exceedingly grateful to him for the hospitality which he has offered to us and which he is to extend to us to-night. May I, when I am mentioning a few facts with regard to the Lord Mayor, be allowed to congratulate him upon the honour which was lately conferred upon him by His Majesty, the King. (Applause.)

Vice-Chancellor Ogilvie, who is the representative of this University, has, I understand, not been long with us in this city, but while he has been here he has been very active, not only in academical, but in civic activities, and he has made his presence felt. We are very glad to have him with us, and may I just mention in a word how grateful we are to him and the University for the facilities which have been afforded to us in this University. (Applause.) It has been a wonderful setting to the Congress.

Now, I shall call first upon the Lord Mayor to offer you a few words of welcome.

The Lord Mayor (who was greeted with applause) said: Mr. President, ladies and gentlemen, in the first place, I just wish to say that I esteem it a very great honour indeed to be invited here this morning and to have the opportunity on behalf of the citizens of Belfast to extend to one and all a very hearty welcome to our city. (Applause.)

We are at all times delighted to have visitors, particularly those from across the water, because I am afraid if we were to take the Press for a true guide of what was taking place in Belfast the last few weeks you might have been afraid to come over. But I am pleased to tell you—and I am sure you are delighted to know—that the city to-day is peaceful. The trouble for the moment is over, and let us hope it will continue so. (Applause.) Although it looked serious from what appeared in the Press, and while certainly some lives have been lost, still it was local: it was confined to a very small area, and could in no way have interfered with the comfort of your Congress. (Applause.) So you may rest assured you will be perfectly safe, and it is delightful to see so many present; and those ladies, perhaps, who were afraid to come over, and perhaps induced some of their friends not to come over, I think when you go back and tell them the happy time you spent they will be sorry they did not accompany you. (Applause.)

Now, your President has said that this is the fifty-third Conference, and he said there were four held in Ireland, but he did not say that this is the first time you have honoured Belfast by having it here. Now, what is wrong I do not know, and I hope it will not be fifty-three years until you return to the city. (Applause.) We have many things to interest you in Belfast. Belfast is really a modern city, but still we have many fine buildings, good wide streets and, above all, it is a healthy city. Moreover, apart from the city, the surroundings are very nice. I do not know what arrangements have been made for showing you around the North of Ireland, but if you have included Portrush, or that coast drive, you will see something worth seeing. The scenery outside is very good, and many things here will interest you in the city of Belfast. It is a great honour to preside over a city like this, and to be called upon eight times to occupy that position is indeed a great honour. (Applause.)

Now there is one little "snag" about to-night—I hope you will all turn up at the City Hall—I have unfortunately to apologise for the absence of my wife in London, and I had to leave London last night and travel by Heysham to be here to-day. She did not feel like it and she asked me to apologise to the ladies, and to wish you a very happy and pleasant time. (Applause.) You will understand, when I am receiving you to-night, I will not have any Lady Mayoress; I will be alone. This is all I have to say. I have only formally to declare your Conference open and express the hope that it will be of great value to your Association and that you will have a very pleasant time in our city and carry away with you pleasant memories of it, apart from the business side, and return, as I have said before, before fifty-three years. (Loud and prolonged applause.)

The Vice-Chancellor of Queen's University (Dr. F. W. Ogilvie, M.A.) said: Mr. President, my Lord Mayor, ladies and gentlemen, on behalf of the University I would extend to you, as the Lord Mayor has extended on behalf of the city, a very warm welcome and lively good wishes that you will have a happy and a successful Congress. You, my Lord Mayor, have more experience of Congresses than I have, but this is the first time that I have had the honour of being at one which has met at half-past nine in the morning. (Laughter.) I do not know what your habits are up at the City Hall, but it certainly does not disturb us at the University, because many of our gatherings meet normally at nine, some at eight, and some even before.

But you will have noticed, although this is the formal opening, that on Sunday, at 8 p.m., there was an informal opening. I do not know if you were asked to that, sir; I was not. (Laughter.) What mystic rights members of the veterinary profession may exercise at a Congress of this kind I do not know, but the lay public does regard your science with great esteem. Ordinary human medical science is a thing that one looks upon with gratitude—especially if one is ill—but not always with respect; it has been subject in its long history to so many irrational gusts of passion—winds of doctrine of various kinds from which, if I understand aright, veterinary medical science has been singularly free; that your progress as a science has apparently been more ordinary, more going from strength to strength, on the basis of definite experiment and observation, and very little upon a theory of life or guesswork. And there are no doubt many reasons for that difference, but one reason, I suppose, is this: that you cannot blame it on the patient—(laughter)—for it is denied to you that great privilege of ordinary human medical practitioners, that if something goes wrong they can always say it is the other fellow.

I, therefore, welcome you once again in the name of the University. I wish you all success in your Congress, conscious as a layman of the high aims which animate you to study the medicine in all its branches of those creatures so many of which, after all, are not only the servants but the friends of man. (Applause.) And to you, Mr. President, may I extend, on behalf of the University, a special welcome, both for yourself, also for the high position which you hold as President of this Congress, and, not least, because you come from Dublin. Moreover, as you have reminded us, this Congress is meeting in the land of the horse, and within a few days of one of the greatest horse shows in the world. So I thank you, sir, for this opportunity of bidding you welcome to the Congress, and I wish you every success. (Prolonged applause.)

The President: I wish to move formally that a hearty vote of thanks be given to the Lord Mayor and Vice-Chancellor Ogilvie for their kind and cordial words of welcome to this Congress in this city and in this University. I am sure that that will meet with a hearty response. (Loud and prolonged applause.) I want especially to thank the Lord Mayor for his attendance here to-day. When one remembers that he has come especially across the water in order to be present this morning, I think that is a very great compliment to us—(hear, hear)—and we are glad to have his assurance of peace in this city—not that it would affect the success of the Congress, but so that no one will feel at all uneasy. I am sorry to think that the Vice-Chancellor did not feel quite happy that he was not invited last night to the function. I am not aware that there were any secrets transferred or conferred, but if there were, it was between individuals. I am sure that we would have been exceedingly pleased to have had the honour of his presence at our meeting last night, and I can assure both the Lord Mayor and the Vice-Chancellor that if any of the meetings—social or otherwise—would interest them, we would be only too glad of their presence. (Applause.)

We are very sorry that the Lady Mayoress is unable to support the Lord Mayor—not that I think the Lord Mayor requires any great support—(laughter)—but we are informed how gracious she is and how helpful to the Lord Mayor in charitable and other functions. Again, I thank the Lord Mayor of Belfast and the Vice-Chancellor for their presence here to-day. It is a great augury for the success of this Congress, and I am quite sure it will be as successful as, if not more so than, many that have been held hitherto. That finishes the business of this meeting. (Applause.)

CONGRESS MEETING OF COUNCIL, N.V.M.A.

Those members of the Council of the National Veterinary Medical Association present at Congress met at the Queen's University, Belfast, for an hour prior to the Annual General Meeting on the afternoon of Wednesday, July 31st, 1935, when the business detailed below was transacted under the Chairmanship of the President, Professor J. F. Craig. There were also present Captain J. R. Barker, Mr. David Brown, Mr. H. E. Bywater, Major T. Dalling, Lieut.-Colonel J. A. Dixon, Mr. P. F. Dolan, Mr. A. A. Donnelly, Mr. E. P. Edwards, Captain J. Fox, Captain O. V. Gunning, Captain H. Tudor Hughes, Mr. H. V. Hughes, Mr. H. G. Lamont, Mr. W. W. Lang, Captain S. J. Motton, Mr. W. Nairn, Mr. J. N. Ritchie, Captain J. R. Rider (Hon. Secretary), Mr. G. A. Sangster, Mr. P. L. Shanks, Captain R. Simpson, Mr. H. W. Steele Bodger, Mr. T. R. Thomas, Mr. A. Thomson, Mr. W. Tweed, Professor G. H. Wooldridge, Captain W. G. Wragg (Hon. Treasurer) and Professor J. G. Wright, together with Mr. F. Knight (General Secretary) and Mr. C. O. Langley (Solicitor).

The minutes of the July Quarterly Meeting of Council, having been published in *The Veterinary Record*, were taken as read and signed as correct.

Premises Sub-Committee Report. — The President informed the Council that the Association were now in possession of the report of the surveyor upon premises at 22, Russell Square, W.C., and it was a question as to what should be done with it. He thought it might be well if it received further consideration, because that was going to be a matter of considerable importance to the Association eventually.

In the absence of the Chairman of the Finance and General Purposes Committee (Lieut.-Colonel P. J. Simpson) Major Hamilton Kirk gave the Council the gist of the report of the surveyor on that matter.

After discussion, Council passed the following resolution: "That the matter be referred for further consideration to the Finance Committee and that the report of the surveyor and the recommendations and observations of the Finance Committee be circulated to all members of Council."

The Secretary now read the following apologies for absence: Professor G. F. Boddie, Professor J. B. Buxton, Mr. H. W. Dawes, Mr. Arthur Gofton, Professor Sir Frederick Hobday, Mr. J. W. McIntosh, Captain W. R. McKinna, Captain G. Dunlop Martin, Mr. J. W. Hall Masheter, Professor W. C. Miller, Major-General Sir John Moore, Major R. H. H. Over, Captain A. W. Noel Pillers, Mr. W. D. Rees, Mr. Horace L. Roberts, Major A. Spreull, Major F. J. Taylor, Major J. H. Taylor, Lieut.-Colonel P. J. Simpson, Captain W. Watt, Dr. A. W. Whitehouse, Mr. T. Wilkinson, Mr. Wm. Woods and Dr. W. R. Wooldridge.

Correspondence.—The Secretary laid before the Council a letter from Mr. Hall Masheter, of Newnham-on-Severn, enclosing a copy of a scheme for eradicating bovine tuberculosis. On the proposition of Mr. Nairn, seconded by Captain Barker, it was decided that this material be referred to the Veterinary Officers and Public Health Committee, to be circulated to members before the meeting.

Election of New Members.—The following gentlemen, having completed forms of nomination and paid their subscription, were elected to membership of the Association, on the motion of the President: Messrs. W. Aulton (Nuneaton); A. Bailey (Banbridge); J. Edwardson (Tutbury); P. E. Emson (Bourne); C. A. Ewing (Belfast); J. D. Ferguson (Crieff); R. M. Gambles (Cyprus); H. D. Gilmore (Kirkcubbin); J. R. Kellett (Belfast); P. MacGregor (Newtownards); D. M. McIntyre (Pitlochry); T. McNabb (Lurgan); B. Moss (Woodford); G. H. Kirby Peace (Dallington); M. J. Sim (Belfast); D. R. Williamson (Dungannon); J. S. S. Woodrow (Goole) and T. P. Young (Leith).

Annual Report and Balance-Sheet.—These documents, which had been published in the Handbook of the Association, were taken as they stood and approved for submission to the Annual General Meeting, on the proposition of Mr. H. W. Steele Bodger, seconded by Captain R. Simpson.

Annual Meeting, 1936.—The Council decided to leave it to the Annual General Meeting to decide as between Hove, Harrogate and Scarborough as the place at which the Annual General Meeting of 1936 should be held, letters of enquiry and of invitation respectively from the authorities of the first two towns having been read to the Council by the Secretary.

Nomination of President and Vice-Presidents

President.—The President said that he had great pleasure in nominating Captain J. R. Barker, of Hereford, as President of the Association for 1935-36. He need not remind the Council how active a member of the Association and of its Council Captain Barker was and what his abilities were. He was quite sure that Captain Barker would fill the post well, and he therefore nominated him as the next President. (Loud applause.)

Professor Wooldridge seconded the nomination.

Captain Barker, in acknowledgment, observed that it was with some diffidence that he accepted that nomination, but he felt that it was his duty—and perhaps it might prove to

be his pleasure—to allow his name to go forward, and he thanked them, therefore, for putting it forward. (Applause.)

Vice-Presidents.—The following nominations were unanimously made:

For England and Wales (South), Mr. W. D. Rees (for re-election).

For England and Wales (North), Captain R. Simpson (for re-election).

For Scotland, Major J. G. McGregor.

For Ireland, Mr. P. F. Dolan (for re-election).

Nomination of Other Officers

(*All for re-election*)

Hon. Treasurer.—Captain W. G. Wragg.

Hon. Secretary.—Captain J. R. Rider.

General Secretary.—Mr. F. Knight.

Auditors.—Messrs. Fairbairn, Wingfield and Wykes.

Editorial Representative.—Mr. W. Brown (re-appointment by Council).

Solicitors.—Messrs. Fowler, Langley and Wright.

Joint Meeting of the Parliamentary and the Veterinary Officers and Public Health Committees.—The Secretary, in the absence of the Chairman (Captain J. C. Coleman) read the following report:—

A Joint Meeting of the Parliamentary Committee and the Veterinary Officers and Public Health Committee was held at 2, Verulam Buildings on Wednesday, July 17th, 1935.

Captain J. C. Coleman was appointed to the Chair, and there were also present Mr. H. W. Steele Bodger, Captain O. V. Gunning, Mr. H. W. Dawes, Mr. G. P. Male, Major-General Sir John Moore, Major R. H. H. Over, Captain R. Simpson, Mr. H. P. Standley, senr., Captain W. K. Townson and Mr. T. Wilkinson.

Apologies for absence were received from the President (Professor J. F. Craig), Lieut.-Colonel J. A. Dixon, Mr. S. V. Golledge, Captain S. J. Motton, the Hon. Secretary (Captain J. R. Rider), Major D. S. Rabagliati and Dr. W. R. Wooldridge.

The minutes of the Joint Meeting held on June 25th were read and signed as correct.

In connection with the draft Milk (Special Designations) Order, Mr. Male briefly stated the views of the Ministry of Health concerning the Association's recommendations with regard to the Order, as ascertained at a meeting between the deputation appointed by the Council on July 2nd, Mr. J. N. Beckett and Dr. Hamill of the Ministry of Health and Mr. Cabot and Mr. Blackshaw of the Ministry of Agriculture, held at the Ministry of Health on July 16th.

As this meeting left the Association's representatives in no doubt that it is the intention of the Ministry to give the county councils a free hand in making their arrangements for carrying out the Order, the Joint Meeting decided to recommend to the N.V.M.A. Council:—

(i) That a copy of the proposals presented by the Association to the Ministry of Health be sent to the County Councils Association and the Association of Municipal Corporations and that they each be asked to receive a deputation in support thereof.

(ii) That in the event of interviews being arranged with those bodies, the N.V.M.A. representatives be the same as waited upon the Ministry of Health, namely, Mr. G. P. Male, Captain R. Simpson and Mr. H. W. Steele Bodger, with the addition of Major D. S. Rabagliati, who was unable to attend on that occasion.

(iii) That the attention of the N.V.M.A. representatives on the Parliamentary Science Committee be drawn to the Association's recommendations, and in particular to the view of the N.V.M.A. that the tuberculin testing and clinical examinations should remain, as at present, in the hands of veterinary practitioners, subject to collaboration with whole-time staffs where such exist, and that definite instructions should be issued to local authorities in order to ensure uniformity of administration, etc. That, if the said representatives think the Parliamentary Science Committee can assist in achieving those objects, they be asked to seek the Parliamentary Science Committee's aid.

(iv) That members of the profession be invited to urge their local Members of Parliament to support the Association's recommendations, especially with regard to tuberculin testing, clinical examinations, and need for uniformity.

At the interview at the Ministry of Health the deputation promised to give further consideration to the schedule of diseases on the veterinary certificate in respect of herds licensed under the new Order.

This matter was discussed by the Joint Meeting, and it was agreed that in addition to the substitution of "Tuberculosis in any form with emaciation" by "*all clinical forms of tuberculosis*" as already recommended, the Ministry should be asked to delete from the schedule "Any comatose condition" and to substitute therefor "*any acute septicæmic condition.*" Also that to "Indurated udder" there should be added a qualifying footnote. (The wording of this footnote is still under consideration.)

Subject to these alterations the Committee recommends that the schedule be approved by the Association.

In accordance with the instructions of the Council, consideration was given to the following resolution submitted at the Edinburgh meeting on July 2nd by the Society of Veterinary Practitioners:—

"That this meeting of the Society of Veterinary Practitioners, held co-jointly with practitioners of Surrey, Kent and Sussex at Tunbridge Wells on June 28th, 1935, is of opinion that the free tuberculin testing of herds by whole-time veterinary officers of county and municipal authorities is wrong in principle; that it constitutes a serious economic injustice (or loss) to practitioners; that it is an unfair competition by sheltered staffs and is unnecessary in the public interest, and when accompanied by the refusal to give official acceptance to the certificates of private practitioners is calculated to undermine their prestige and to destroy the confidence of their clients in their professional ability and standing."

"That this meeting of the Society of Veterinary Practitioners respectfully requests the Council of the N.V.M.A. to appoint a Special Committee to investigate the subject of free tuberculin testing, especially in

(*Concluded at foot of col.* 1, *page* 980.)

ANNUAL GENERAL MEETING

Captain J. R. Barker Elected President

The Fifty-third Annual General Meeting of the National Veterinary Medical Association of Great Britain and Ireland was held in the Great Hall, Queen's University, Belfast, at 3.30 p.m. on Wednesday, July 31st, 1935. The President (Professor J. F. Craig), who occupied the chair, was accompanied on the platform by the Vice-Presidents and other officers of the Association.

The list of those in attendance at Congress will be found following the President's Address in this issue. Following is the list of members who sent apologies for absence from the Annual General Meeting: Mr. J. Anderson (Keith), Professor G. F. Boddie, Professor J. B. Buxton, Mr. J. Wright Conchie, Mr. H. W. Dawes, Mr. W. L. Dwerryhouse, Mr. R. A. Hall, Professor Sir Frederick Hobday, Mr. H. King, Mr. J. W. McIntosh, Captain W. R. McKinna, Captain G. Dunlop Martin, Mr. J. Martin, Mr. J. W. Hall Masheter, Professor W. C. Miller, Major-General Sir John Moore, Major R. H. H. Over, Lieut.-Colonel W. S. Mulvey, Captain A. W. Noel Pillers, Captain E. Brayley Reynolds, Mr. W. D. Rees, Mr. Horace L. Roberts, Major A. Spreull, Major J. H. Taylor, Lieut.-Colonel P. J. Simpson, Colonel G. K. Walker, Captain W. Watt, Dr. A. W. Whitehouse, Mr. T. Wilkinson, Mr. Wm. Woods and Dr. W. R. Wooldridge.

The Secretary read the notice convening the meeting, dated June 29th, 1935.

The President then said: Ladies and gentlemen, I wish to offer a hearty welcome to all delegates who are attending this Conference. We know that they will find in the various functions much of interest and much that they will be likely to remember as a mark of the Congress itself. We hope also that they will enjoy themselves. I give you a very hearty welcome to this Congress. (Applause.)

Presidential Address.—Now, ladies and gentlemen (proceeded the President), the President has to inflict upon you an Address. According to our regulations the President is required to deliver an address on the termination of his year of office, at the Annual General Meeting. [The President proceeded to deliver his Presidential Address, which was received with enthusiastic appreciation, and which is reproduced at the commencement of this issue.]

Mr. William Nairn (Blairgowrie): I am sure we have listened with very great pleasure to Professor Craig's Address. He has given us a hopeful forecast of the development in the future. I need hardly stress the excellence of this address where everyone is a member of the profession and so closely associated with the work. I would therefore ask you to accord our President a very hearty vote of thanks.

The vote of thanks was passed unanimously.

MEETING PLACE FOR 1936

The President now passed to the matter of the meeting place for 1936. There were three proposals and he had been asked by Council to allow them at that General Meeting to decide for themselves where they would meet next year. Continuing, the President said: The three places are: (1) Hove, in the south of England, a watering place; (2) Harrogate, which you all know well; and (3) Scarborough, another seaside resort. I wish to leave them as proposals and keep them in the opposite order to that which I have read out, beginning with Scarborough.

Professor G. H. Wooldridge (London): May I say that these names should be put for consideration in the order named—Hove the first choice, Harrogate second, and Scarborough third. Two of them are seaside places and one inland, and if you vote for the three by a show of hands separately and individually it will be splitting the vote for a seaside as against an inland place. I would therefore propose, Sir, if I may, that the first proposition to put to the body of the hall is, shall it be a seaside place or an inland place, bearing in mind what the three places are? (Hear, hear, and applause.)

Mr. H. G. Lamont (Stormont) seconded the proposition.

The President: Those in favour of going to an inland place will please hold up their hands. Six. Against? (There was a large show of hands.) A seaside place is apparently required and therefore we have to choose now between Hove and Scarborough. I will take them in the order; first, Hove. Those in favour of holding the Annual Meeting at Hove next year?

Major W. J. B. DeVine (Birmingham): Mr. President, perhaps you would tell us what advantages there are; it would help us to decide.

The President: The Secretary will read the communication we have had from Hove; but

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its economic and ethical bearings, and their consequences within the profession, and to agriculture."

In the course of the discussion the Secretary read a letter from Lieut.-Colonel J. A. Dixon.

It was decided to recommend to the Council that this resolution be forwarded to the Royal College of Veterinary Surgeons.

It was further agreed to recommend that, if received, the proposed deputations to the County Councils Association and the Association of Municipal Corporations should stress the views expressed in the foregoing resolution.

After some discussion this report was adopted, and there being no other business, the Chairman declared the meeting closed.

there is no communication at all from Scarborough.

The Secretary read the communication from the Town Clerk of Hove.

Professor J. G. Wright (London): Mr. President, if members would like to know some of the attractions of Hove, and if I might be allowed to put them—first of all, it lies in beautiful country on the South Downs, and not only is it a famous seaside resort itself but it is in close proximity to others. It is a very large seaside resort and very fine, I should say the best in the country. In point of amusement it is one of the foremost watering places in the country. I am quite sure we would be very amply served in that connection, as in hotels.

Captain R. Simpson (Carlisle): I am afraid this has developed into a controversy about the south. We did hold a Congress in the south of England recently, and I think it is the turn of the northern part of England to have one there. I do not know that I can tell you all the attractions of Scarborough because I do not know it as well as Professor Wright perhaps knows Hove, but I do suggest we get all the advantages at Scarborough we get at Hove. I do think there is a strong case for holding the next Conference in the north in view of the fact that one was held in the south so recently.

Captain A. H. Watson (Bradford): I know Scarborough. There is every facility for amusement. The scenery about is beautiful, and also about Whitby, and it is not far from York and other places round that district. I think it was in 1922 or 1923 that the Congress was held in Yorkshire, and I hope you will give us a turn this time.

The President: I now put the proposition. First, those in favour of going to Hove? Those in favour of Scarborough? I think Scarborough has it. Decided that the next Annual Congress will be held at Scarborough. The time is yet to be fixed.

Election of President

The President: The next item on the agenda is the election of the President for 1935-36. I want to propose from the chair the election of Mr. J. R. Barker, of Hereford, to be the next President. I am not going to inform you of all his good qualities because they are so well known to the members of the Council and of the Association. He is a man of great ability and he has been very active in the interests of the Association and the profession for many years. I am sure that he will make an excellent President and that he will be an honour to the profession. I do not think it is necessary for me to put it to you again, but in case there might be any doubt I put it to you that Mr. Barker be elected.

Professor Wooldridge seconded the proposition, which was carried with acclamation, the newly-elected President returning thanks in a few well-chosen words.

The President: That finishes the business of the public proceedings of the Annual General Meeting. . . . The next announcement I have to make is the absence of our friends, Sir Weldon Dalrymple-Champneys and Lady Dalrymple-Champneys. We have just received a telegram from them conveying greetings to you and all members of the "National." (Applause.)

The Secretary then read the telegram, addressed to the President, which was as follows: "From the Baltic Lady Dalrymple-Champneys and myself send our heartiest greetings to you and all members of the 'National' and wish you an enjoyable and successful Conference. It is a great disappointment not to be with you."

The President: It is exceedingly nice of Sir Weldon Dalrymple-Champneys and Lady Dalrymple-Champneys to keep us in mind. (Applause.)

Award of Dalrymple-Champneys Prize for Published Work of Outstanding Merit in Scientific Research, Clinical Investigation or Public Health Activity

The President: In that connection it is now my very pleasant duty and privilege to present the cup which was given by these friends of ours who have already sent us this wire. Unfortunately they are unable—to our mutual regret—to be with us at this Congress. This prize takes the form of a cup and medal, which were presented for the first time last year. The award is to be made to a member of the Association, to mark scientific and clinical work of outstanding merit. It is intended that the cup be held for one year, and the person to whom the award is made shall have his name inscribed on it, but the medal remains his property. This year it was unanimously recommended by the Selection Committee and unanimously approved by Council that the award be made to Major Dalling—(loud applause)—for his meritorious work in veterinary science, which has proved of so much value to that science and to the community. It is not necessary for me to reiterate before an audience of this kind the vast amount of successful investigation which Major Dalling has carried out over a great many years. His contributions to veterinary literature and knowledge have been many and varied, and in particular one might mention the investigations in the practical application of vaccination against blackleg and contributions to our knowledge of bacillary white diarrhœa and other poultry diseases, and last, but not least, the discovery of the cause

of leptospiral jaundice in dogs. Major Dalling is well worthy of this recognition, and I trust that this token may be regarded by him as a mark of the esteem in which he is held by the profession and Association as well as of the merit of his work and investigations. I will now ask Major Dalling to come forward to receive the cup and medal.

Major Dalling, receiving the awards at the hands of the President amid loud applause, returned thanks in suitable terms.

ANNUAL REPORT AND BALANCE-SHEET

The next business was the presentation of the Annual Report and Balance-Sheet.

The President: I do not know whether the members wish to go over the Balance-Sheet page by page. I presume they have carefully studied both the Annual Report and the Balance-Sheet. If they think they can point out some items which either they wish to amplify or to comment upon I think I will allow that.

Mr. H. W. Steele Bodger (Tamworth): I move that they be adopted.

Lieut.-Colonel T. Dunlop Young (London) seconded the motion.

The Secretary then read the Auditors' Certificate, dated May 21st, 1935.

The President: I put it to you that the Annual Report and Balance-Sheet be received and approved. (A show of hands was asked for and the Annual Report and Balance Sheet were declared passed.)

ELECTION OF OTHER OFFICERS

Vice-Presidents.—The President: Now we come to certain other elections. First, the election of the four Vice-Presidents.

The Secretary: The Council unanimously resolved to recommend to the Council that the four Vice-Presidents be as follows:—

For England and Wales (South), Mr. W. D. Rees.
For England and Wales (North), Captain R. Simpson.
For Scotland, Major J. G. McGregor.
For Ireland, Mr. P. F. Dolan.

These were proposed by Professor Wooldridge, seconded by Mr. Steele Bodger, passed unanimously, and declared elected.

Hon. Treasurer.—It was proposed and seconded that Captain Wragg be re-elected to the office of Hon. Treasurer. This was carried unanimously.

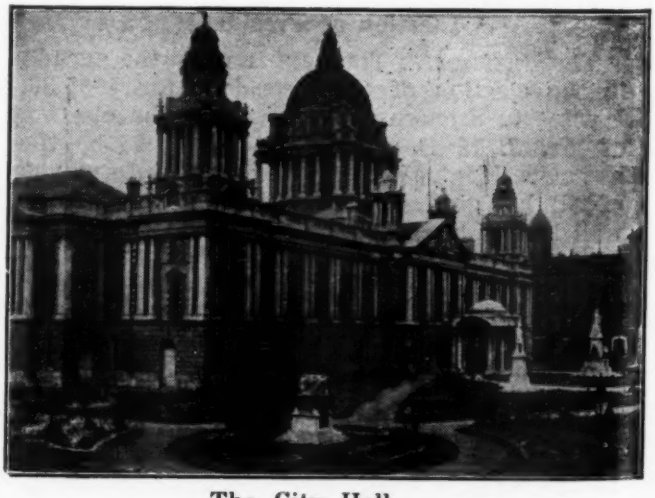
Hon. Secretary.—Captain J. R. Rider was unanimously re-elected Hon. Secretary.

General Secretary.—The General Secretary, Mr. F. Knight, was also unanimously re-elected.

The President: We have had no matters referred from the Council. The next item is "Any other matters that can properly be considered at an Ordinary General Meeting." It is left in a very indefinite way, but you have to consider whether there are any matters you wish to discuss. . . . There are none. I move that this meeting be adjourned until August 2nd, at 3 p.m.

Mr. Steele Bodger seconded the motion, which was carried.

Our Finance Minister—Looking Ahead.



The City Hall

Ceremonial and Social Events

The gracious and enthusiastic manner in which the Government of Northern Ireland—represented by the Minister for Agriculture, Sir Basil Brooke—and the civic and academic dignitaries of the City and University of Belfast respectively, united in welcoming and entertaining the Association's delegates constituted a most gratifying feature of the 1935 Meeting. The housing of Congress in the magnificent buildings of Queen's rendered the University a natural and most agreeable rendezvous not only for the studious, but for those for whom the Annual Conference is primarily an opportunity for the renewal of friendships, and indulgence in the pleasure—or is it vice?—of "talking shop" for a week on end. Everyone admired Belfast as a city, and in the broad streets of fine shops the ladies had no excuse for an idle hour. Nor, for that matter, had anybody. As, we hope, will be clearly reflected below, the Provisional Committee saw to it that the sterner business of the gathering was lightened by every feature—dances, tours and recreations—most calculated to appeal to the greatest number of participants in Congress.

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The proceedings at the Official Opening of Congress, at which the Lord Mayor of Belfast and the Vice-Chancellor of Queen's University extended a welcome to the delegates in person, are reported earlier in this issue, but this was not the first of the friendly gestures with which the delegates and their ladies were greeted by the warm-hearted folk of Ulster. That was a preliminary "affair between friends" on the Sunday evening, when the North of Ireland Veterinary Medical Association held an informal "at home" in the Grand Central Hotel.

The guests were welcomed by the President (Mr. McCrea) and Mrs. McCrea, and during the evening tea was served to the accompaniment of the music of the hotel orchestra.

Everyone spent a most enjoyable evening and appreciated the opportunity of renewing old acquaintanceships and making new ones.

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CIVIC RECEPTION

Congressional Guests of the Lord Mayor

The Civic Reception took place in the City Hall, Belfast, on Monday evening at 8.30, when the Lord Mayor (the Right Honourable Sir Crawford M'Cullagh, Bart.) received the guests.

The absence of the Lady Mayoress, who was in England, was much regretted. The City Hall was beautifully decorated, and at the close of the evening the Jubilee floodlighting was turned on for a short period for the special benefit of the non-Ulster visitors.

A feature of the evening was the number of old-world dances, and when the great event was at an end the guests cheered the Lord Mayor as the only adequate expression of their appreciation and enjoyment of his hospitality.

Miss M'Crea's orchestra rendered a splendid selection of music during the reception of guests, and afterwards for the dancing, which was much enjoyed.

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THE PRESIDENT'S RECEPTION

It was no small tribute to the success attendant upon this event at the Grand Central Hotel on the Tuesday evening that all present—and the number of guests was very large—felt no sense of anti-climax after the magnificent affair at the City Hall recorded above. Many, indeed, may have derived even greater enjoyment from this purely "domestic" function, and certainly it was as entertaining a happy family party that the President and Mrs. Craig greeted their guests and made every provision for their diversion.

Over 300 members and their ladies attended to pay their tribute of affectionate esteem, and the large company spent a delightful evening, dancing continuing until "the small hours."

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THE GOVERNMENT BANQUET

Minister of Agriculture's Tribute to the Profession

On Wednesday evening, July 31st, a Government Banquet was held in the Grand Central Hotel, Royal Avenue, Belfast, when the Government of Northern Ireland entertained a large company of members of the Association and guests. The Right Honourable Sir Basil S. Brooke, Bart., C.B.E., M.C., D.L., M.P. (Minister of Agriculture) presided.

The first Toast was that of the King, which was submitted by the Chairman, and the National Anthem was sung by the company.

SIR BASIL BROOKE'S WELCOME TO THE ASSOCIATION

Sir Basil, continuing, said: I feel that perhaps it is rather late in the day for the Government to welcome the Association, which has honoured us with its visit to Belfast. Nevertheless, on behalf of the Government I wish to give you all the warmest and heartiest welcome. (Applause.)

Proceeding, Sir Basil mentioned the recent legislation which had taken place in Northern Ireland, where the Government had closely co-operated with their profession. (Applause.) If I take the milk scheme (continued the Minister)—though probably most of you have studied it fairly carefully during your tours around the Mourne Mountains and elsewhere—

(laughter)—we endeavour to produce clean and healthy milk for the consumer, and with the co-operation of the urban authorities and the county authorities, and the farmers' organisations, all milk produced for consumption or manufacture is inspected by a veterinary officer—(hear, hear, and applause)—and I would like you to understand this, that that inspection is not carried out in a manner which I might call police-like. Veterinary officers who are in charge of this work are men who have shown the greatest tact and the greatest skill, not in dragooning the farmers to carry out the necessary improvements in their byres, but in showing them the right way. I think you will agree with me that if that can be done it will be of enormous benefit not only to the agricultural community but to the whole community as well.

We have also thought it advisable that the inspection under the Meat Subsidy Act should be carried out by veterinary officers. (Hear, hear.) That, again, has been carried out in a very efficient manner, and I think my farmer friends will agree with me. Some people may say it is no part of the veterinary officer's business to judge an animal which comes up to 54 per cent. to qualify for subsidy, but our view—and I think it is right—is that any veterinary officer in charge of animals should be in a position—and is in most cases in a position—to judge whether an animal is fat or not. You are all aware of the vast expense incurred owing to disease and various troubles. It is hard enough to find a cure, but it is far harder to get information as to the means of preventing the disease. I believe one of the most important functions a veterinary officer can carry out is the function of explaining in simple and plain language to the farmer the causes of the disease and the cure and the best way to prevent that disease occurring.

You are aware of the serious losses involved by the ox warble-fly. The damage in Northern Ireland has been estimated at nearly £100,000 a year. Not only does the animal suffer in condition, but the quality of the hide is very much deteriorated, and through the counties we have carried out experiments showing that the pest can be eliminated quite 100 per cent. at very little expense. I am considering the issuing of an Order—and I think probably it is the first time it has happened in Great Britain or Northern Ireland—that any animal suffering from that disease shall be prohibited from being exposed for sale at markets or fairs. (Hear, hear, and applause.) It is quite obvious, I think, that many are desirous of treating their animals so as to prevent the infestation, but there is no use in one man, or even two, doing it: it is necessary that every single man should do it for the sake of the health of his animals and the prices he gets for them.

Now, may I as a layman—who not only privately admires your profession, and has had the greatest respect for your profession, but also as one in an official position who more than ever has been able to admire the great work which your people have done—make a few suggestions as I see the position as an outsider? Admittedly you have been sitting in Congress for the last few days, and it is necessary for you more or less to talk—I don't know if "jargon" is the right word—in words the ordinary layman like myself is unable to understand. That is necessary. I quite appreciate that. But might I ask those who are coming young into the profession that when they go down into the counties and when they go amongst the farmers—for they are the best educators that can be found anywhere as to the rearing of stock—to use simple and readily understandable terms in explaining things to those farmers and talk to them about the problems they have to face—as I have already pointed out is being done by our practitioners. I believe that then the farmers themselves will appreciate that there is something in the great science you are studying; because, after all, if we face the facts, the farmer has had no education in either veterinary matters or medical matters. He rather considers that a doctor, or perhaps a veterinary officer, is a kind of ju-ju man who comes down and gives his cow what is called in this part of the world "a bottle." It doesn't matter what is in the bottle, it should get right. If it does not get right there is probably something wrong with the ju-ju man. If, on the other hand, you come down and explain the trouble to the farmer, he does not look at it that way, and he will not refuse to have anything more to do with you.

And, again, in the prevention of diseases in various animals it has been definitely proved that nutrition has a most important part to play. I understand that most of your younger officers when they are studying this profession—doing their five years—have a vast number of subjects in which to study, and therefore with regard to these various difficult questions of nutrition and other factors associated with the prevention of disease it would seem to me, as an outsider, that a closer liaison might be established between the various sciences on these matters. Because as the world is to-day it is becoming more complicated and more difficult. Science is progressing and it is important in my view for a man who is studying a profession to know the manifestations of another profession. Speaking as a soldier, although you may belong to one branch of the service you probably do not know what is happening in another branch and the closest liaison is more than necessary. Some here to-night were in the

Army and they will appreciate that unless the closest liaison is established between the infantry, the air arm, and the cavalry, the best results cannot be obtained, and exactly the same thing applies in the lives we are living to-day. I hope, Mr. President, that you will forgive me as a layman for expressing those views, but I think that very often an outsider can perhaps see the trees where perhaps those living in the forest cannot see them, and if I, as a layman, and with the admiration I have for your profession, can be of any assistance I know that you will not take anything that I have said amiss. (Applause.)

I should like on behalf of all the veterinary profession in Northern Ireland to express our gratitude to your Association here to-day. I have read and have heard of the many distinguished men in the profession who are here to-night—but I have not had the privilege or the pleasure of meeting them hitherto. They have written books which are classics in the veterinary world, but unless you see the man face to face you rarely realise his true worth and I think that this visit of the Congress has been and will be of enormous benefit to the veterinary profession in Northern Ireland. May I, on behalf of the Government of Northern Ireland, extend to you a sincere and earnest invitation for a quick return. (Prolonged applause.)

Now, in moving the Toast which is on the List before you, I wish to include Professor Craig—I understand that Professor Craig is shortly to be translated to the Courtauld Chair at Liverpool—(applause)—and, although she is not actually mentioned on the programme, I refer also to Mrs. Craig. (Loud applause.)

Professor Craig, who was greeted with loud and prolonged applause on rising to reply, said: It is difficult adequately to express our gratitude not only on my own behalf and on behalf of my wife, but on behalf of the National Veterinary Medical Association, which I happen to represent at the moment.

I should like to thank you for the very generous terms in which you have referred to the work of the veterinary profession in Northern Ireland. (Applause.) Many of the veterinary surgeons who are now engaged in the Ministry have been students of mine and I still regard them as my friends. (Applause.) What always impressed me in coming to the North here has been the existence of very cordial ties between the veterinary profession and the Government of Northern Ireland.

Sir Basil tells us he is a layman in regard to veterinary science. What impressed me most in his speech has been the fact that the Northern Government are using the veterinary profession in the widest possible field, that they are concerned not only with the working of the profession but also in the value of maintaining health. (Applause.) What we want to stress is that this profession is engaged in the study of animals not only in disease but also in health and that those of us who have studied veterinary science think that the veterinary profession can be used just as much in maintaining health as to prevent disease or to cure disease. (Hear, hear.)

Sir Basil has referred to some of the points in connection with the education of the veterinarian, but I must say this: I do not know of any perfect form of education. It depends largely on the material—and when I am speaking of material I mean students of the veterinary profession—as to what will result during the training. The teachers—of whom I have been one—in veterinary science always like to have with them men who are anxious to learn, not so much to pass examinations as to be efficient in the work in which they will be required. (Applause.) After all, that is the object of all education. Once we know what are the requirements of a country then I think there will be no difficulty in ensuring that a sufficiency of men of ability will be available. Much has been done of late years by the Royal College of Veterinary Surgeons in extending the education to meet the requirements of the country with the object, first, of increasing the knowledge of the primary or essential science on the one hand, and, secondly, of ensuring greater clinical training on the other. We believe that if the veterinary profession are to be used to the fullest possible extent—and we believe that they are an essential service in any country—they must have an intimate knowledge of animals in health as well as disease, also that one of the necessities for the young veterinary surgeon is that he shall have a fairly extensive clinical experience. (Applause.)

I have had a very pleasant time as President of the Association, which includes quite a large proportion of the veterinary profession not only in Great Britain but in Ireland and I would say that our interests are rolled up in the profession. I conclude by saying that we hope that many countries will follow the example of Northern Ireland and take a greater interest in the work of the veterinary profession.

Finally, I venture to speak for my wife. You have honoured her in public, and although she can speak well enough for herself in private when the occasion arises—(laughter)—I think she would wish me to make her grateful acknowledgments now. (Hear, hear.) [Loud and prolonged applause greeted Mrs. Craig as she rose to return thanks.]

"THE GOVERNMENT OF NORTHERN IRELAND"

The Toast of the Government of Northern

Ireland was proposed by Dr. O. Charnock Bradley, who said: This is one of the occasions on which I wish I had the silver tongue of angels. I consented—perhaps rashly—to undertake a task which at the same time was a distinct privilege, namely, to propose the Toast of the Government of Northern Ireland. I should like to make the speech of the evening, but it is quite impossible. We have had two speeches of the evening already and therefore my feeble efforts are going to form a very, very bad follow-on. It is not because I do not want to say nice things but because I cannot say all things.

I cannot pretend, Mr. Chairman, to express in any way adequately the extreme gratitude of the Association for all the kindness we have received since coming to Belfast. (Hear, hear.) Personally, it has been my good fortune to come to Belfast more than once and I may say that I know something at least of the extreme hospitality, good nature, and general affability of the Ulsterman.

We know that whether the task of the Government of Northern Ireland has been difficult or easy since 1921 they have carried out their duties with conspicuous success. (Applause.) They were beset by many difficulties and perhaps not least by having directed upon them constantly the eye of criticism. Were they about to make a success of the experiment or would it come to a fiasco and failure? You will agree with me quite cordially that the success was decided and sealed. (Applause.) That, I am persuaded, was due to the fact that they were always inspired by courage, vision, imagination, and by a strong sense of statesmanship. What they have done is not for me to say here; you all know it.

We all know in this country—we have been told—what they have done in the cause of agriculture and for the benefit of veterinary science. We do know that they will have been an example to other people. (Hear, hear.) We do know schemes hatched out by other legislators, and that these marketing schemes have been subjected to very much criticism. As far as the Government of Northern Ireland is concerned, we are certain that they have done the right thing and we could hope that certain other Governments would take an example from Ulster. (Hear, hear, and applause.)

I am told on very good authority that pig progress—I think that is the word—pig progress has advanced with enormous strides since it was taken in hand and properly organised. I believe that, as a matter of fact, a census was taken in this part of the world and that during last year the pig population rose by some 100 per cent. I am told that last year the pig producers acquired £900,000 more than they did the two years previous. Not more than ten years ago it was my privilege to visit Ulster in connection with a poultry conference. The poultry industry in those days wanted a little revision and a little reorganisation and I am told that the efforts of Dr. Gordon have produced a triumphal advance. Figures are recognised things; they carry conviction where mere words do not.

We are extremely pleased to come to this part of the world. We know Ulster possesses some of the treasures—one might say of the world—in scenery, and we must not forget it was the Ulsterman who drove the Romans out of the North of Scotland and North of England. (Laughter and applause.)

Now I was told—it was hinted to me earlier in the evening—that the speeches were to be brief. I want to thank the Government of Northern Ireland and the people of Ulster for their extreme kindness, and we certainly hope we may come back again *soon*. (Applause.)

The Right Honourable J. Milne Barber (Minister of Commerce) responded in the following terms: May I say, on behalf of the Government of Northern Ireland, how very grateful we are for the very kind way this Toast has been proposed, and I can assure you that if Dr. Bradley has expressed what was in the minds of you, our guests, in connection with your short visit, those that have contributed to your enjoyment and entertainment will feel more than amply rewarded. (Hear, hear.) I can assure you there are times when one appreciates more than anything else that a society of your importance should take advantage of the serene calm which our city affords —(applause)—for the contemplation of those matters which are of great interest to you in your profession, but which I, as a layman, merely acknowledge are very vital to the welfare and good health of the community.

I do not know what your impressions are in coming among us here, but I should not be surprised if one impression, at any rate, is that you have come among really an almost new country and a young people. When we in the North of Ireland look across the water to Great Britain, to her older civilisation, we realise—as indeed every student of English history does —that as far back as the year 1066 you had a William come over from the Continent to England. In Northern Ireland we had to wait until the comparatively late period of 1690 before once again a William came from the Continent. Now, whatever you or anyone else may think of that William's memory or political activities, naturally I as a Minister of Commerce have to keep in mind that it was due to his interest in this country in bringing over the skilled artificers in the manufacture of linen from Flanders to instruct our people in the manufacture and finishing of linen that we owe

one of our greatest industries here in the North of Ireland. Is it any wonder, then, that even after the lapse of those many years his memory is still greatly revered by a great part of our population, even including our Minister of Agriculture? (Laughter.) I wish I could say that it was universally revered, but I have got an instance which will not justify that. (Renewed laughter.)

You have alluded to the doings of our Government. Our Government was started on June 22nd, in the year 1921. Our Parliament was opened—as we shall always remember with appreciation and gratitude—by His Majesty in person. (Applause.) So there is one thing, at any rate, we can claim, that we have not as yet had time to make as many mistakes as you have and your many Governments have with their longer history.

You have very kindly alluded to what our Minister of Agriculture has done in the time, but, generally speaking, the activities of our Province have been directed, so far as the human powers go, to promote the moral and material prosperity of our people, who are put under our care. You may wonder how these have fared since the rest of Ireland elected to separate itself from Northern Ireland and the rest of the United Kingdom—for that is what has actually taken place.

I have told you that we are a young country. We are still growing, and if we look back we are able to point to a remarkably rapid growth during recent years. I alluded to the coming of our William, but even a few years before that—in 1630—Belfast only consisted of some five streets, and five lanes, and not more than 150 houses in all. As recently as the year 1830 the population of Belfast was only 48,224, and during the century which has elapsed since then it has grown to very nearly 450,000 people.

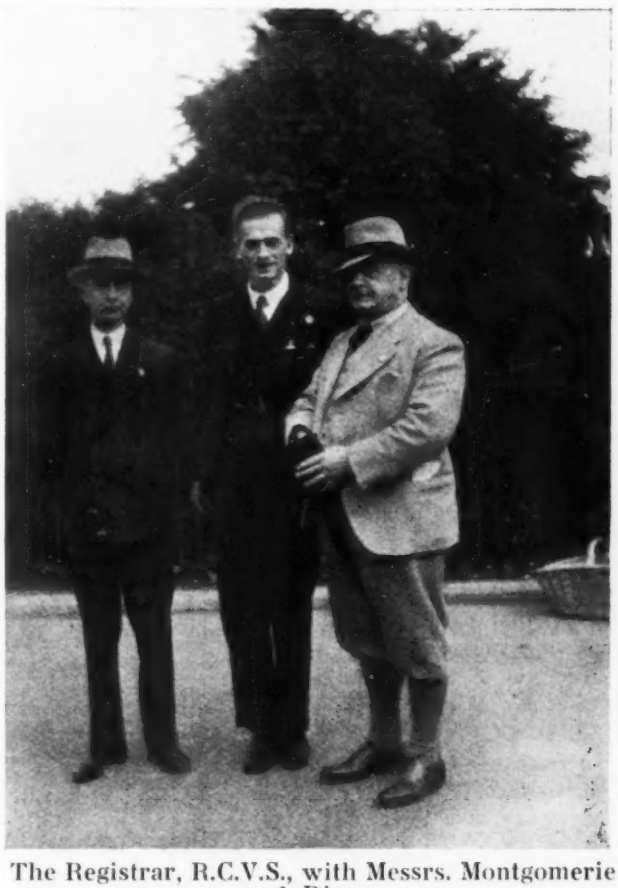
The speaker proceeded to give further interesting details regarding the growth and prosperity of the city, and in doing so said: At the time of setting up our Government we undoubtedly did suffer to some extent, as many of our merchant houses and industries had been built up with the idea of catering for trade throughout the whole of Ireland, and so our merchants and manufacturers did miss a great deal of their market, but I am glad to say that owing to the industry and hard-working qualities of our people the volume of our trade to-day has, I believe, been completely regained. (Applause.)

Mr. Geo. B. Hanna, K.C., M.P., in a most witty speech, proposed the Toast of the Ladies, which was followed by the singing of "For They Are Jolly Good Fellows," and three cheers.

Dr. F. Bullock (Secretary of the Royal College of Veterinary Surgeons) was equally happy in submitting the Toast of the Chairman, who was likewise accorded musical honours.

Sir Basil, in returning thanks, said it was a real pleasure to meet so many distinguished men as he had done during the last few days.

The proceedings were terminated by the singing of the National Anthem.



The Registrar, R.C.V.S., with Messrs. Montgomerie and Dixon.

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THE BANQUET NIGHT "EXTRA"

At the request of the Secretary of the Provisional Committee, Mr. Steele Bodger arranged a dinner and sing-song, followed by a dance, at the Carlton Restaurant for those who were unable to obtain invitations to the Government Banquet. Over 60 people sat down to an excellent dinner, the catering was perfect, and the orchestral accompaniment delightful.

The Toast of the King was accorded musical honours, after which Captain Gunning, who was in the chair, welcomed the guests. The Toast of the N.V.M.A. was received with enthusiasm.

By this time the company was in a lively mood, and the sing-song went with a swing. Much talent was discovered among those assembled, and the following solo efforts were highly appreciated and loudly applauded: songs, Messrs. H. D. Gilmore, R. C. G. Hancock, Major Hamilton Kirk, Mr. and Mrs. Motton,

and Miss Moia Muir; recitations, Major Dalling, Messrs. E. P. Edwards, A. H. Watson; stories, Mr. W. W. Lang, and Yorkshire yarns by Mr. A. H. Watson. Violin solo by Mr. H. Spencer.

The orchestra played popular airs and part songs, everyone joining lustily in the choruses.

Shortly after eleven o'clock the whole company adjourned to the ballroom, where they were soon joined by a large number of the guests who had attended the Banquet. Dancing followed until about 2.30, and during the intervals the following gentlemen entertained us: Messrs. G. B. Hanna, R. C. G. Hancock, P. J. Howard, J. N. Ritchie and Captain Wragg.

It would be invidious with such talent to pick out anyone for special mention, but exception must be made in the case of Mr. G. B. Hanna, who brought the house down with his exceedingly fine impersonations.

As the result of the "toll" extracted from the "gate-crashers" at the dance there will be a profit of about £12 for the two Veterinary Benevolent Funds.

The measure of appreciation felt for the thoughtful organiser of this unofficial affair may be gauged by the fact that in the course of the evening he was accorded musical honours and that at the end a vote of thanks was passed which terminated in a riot, during which he was chaired.

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LADIES' BENEVOLENT GUILD DANCE

On Thursday evening a dance organised by the Ladies' Veterinary Benevolent Guild was held at the Carlton Rooms in aid of the financial resources of the two professional benevolent funds, the attendance being well over 200. The dance floor was excellent, the catering all that could be desired, and a most enjoyable evening was spent.

During the evening Dr. Bullock, in a short speech, explained the objects of the benevolent funds and gave instances showing the nature of the cases they were called upon to deal with, and the kind of help the funds were able to give. He pointed out that about 60 people are receiving relief from the funds, amounting to about £2,000 per annum, but drew attention to the fact that about 3,000 members of the profession do not subscribe to either of the funds. If it had not been for the generosity of a relatively small number of members, who had contributed to the capital of the funds, it would have been impossible to help more than a fraction of those now on the books. He expressed, on behalf of the Councils of the two funds, the gratitude they felt to the Ladies' Guild for the splendid efforts they had made in the past three years, and for the generous financial assistance they had been able to give, which was most cordially appreciated. If those present could do anything to bring the needs of the funds to the notice of members who do not yet subscribe, they would be doing a real service.

Mrs. McLean, President of the Guild, was presented with a bouquet of flowers, and in a graceful little speech expressed the thanks of the Guild to the N.V.M.A. for allowing one of the evenings of Congress week to be free for the Ladies' Guild, and in her own name thanked all those who had helped in any way to make the dance a social and financial success.

Presentation of Golf Trophies

Mrs. Craig, wife of the President of the Association, presented the Simpson Golf Trophies to the winners of the competitions held during the Congress week. The men's cup, presented by Colonel Simpson, was won by Mr. W. R. Kerr, of Belfast, and a silver spoon presented by Captain R. Simpson was won by Mr. P. L. Shanks, of Belfast.

The Dunkin Trophy, presented by Mrs. Dunkin, of Mill Hill, was won by Mrs. Kelly, of Bangor, the runner-up being Mrs. Andrews, of Paisley. A presentation was made by the organisers of the dance to Mrs. Craig as a token of thanks and appreciation of her interest in the work of the Guild.

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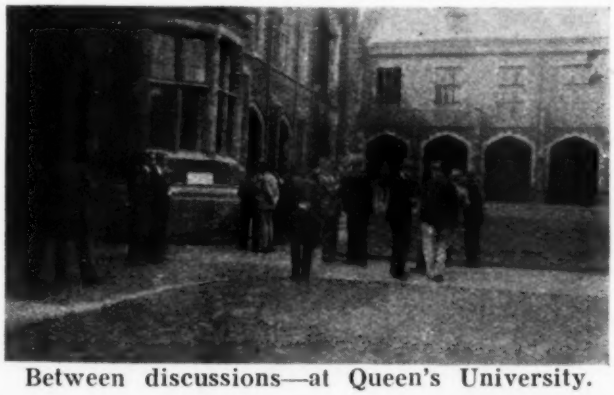
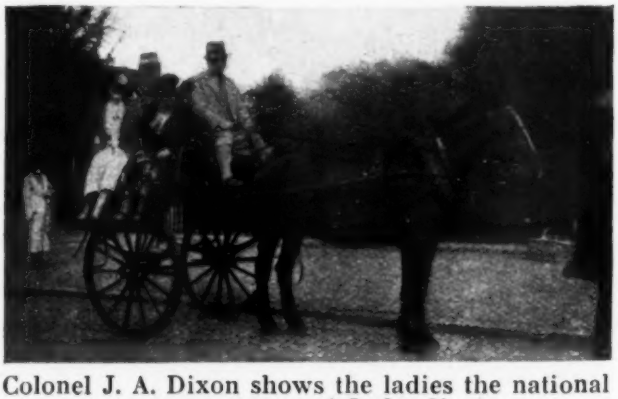


Between discussions—at Queen's University.



Colonel J. A. Dixon shows the ladies the national conveyance of Ireland!

VICTORIA VETERINARY BENEVOLENT FUND GOLF COMPETITIONS

The fourth annual Competition for the "Simpson" Trophy took place during the Congress week on July 30th, at the Knock Golf Club, Belfast. There was an entry of 14 players, the competition being decided on 18 holes medal play.

The winner of the trophy was Mr. W. R. Kerr, Stormont, Belfast, with a nett score of 74. Mr. Kerr retains the trophy for one year and also receives a silver medal presented by Dr. Bradley.

Mr. P. L. Shanks, Belfast, was the runner-up and received the silver spoon.

The Ladies' Competition for the Dunkin Trophy was also held on the Knock Golf Course, Belfast, on the same day. The number of entries was again disappointing this year, but nevertheless the competition provided an enjoyable morning for the competitors.

The trophy was won by Mrs. Kelly, Port-a-down, North Ireland.

The prize provided by Mrs. R. Simpson for the runner-up was won by Mrs. Andrew.

The trophies and prizes were presented by Mrs. Craig during the Benevolent Fund Dance. The competitions resulted in a sum of £5 2s. 6d. being collected for the Benevolent Fund.

R. Simpson,
Secretary, Golf Committee.

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TO STORMONT AND ELSEWHERE

A large proportion of those attending the Congress spent an enjoyable afternoon on the Monday of the Congress week on a somewhat haphazard sightseeing tour to Stormont, Mount Stewart and the Ards Peninsula. The party set out by charabanc from the city centre, the first halt being made at the Ulster Parliament Buildings, Stormont. The Parliamentary and Administrative Buildings were built by the Imperial Government and handed over to the Government of Ulster. They are a magnificent example of Greek classical style and are regarded as the finest Government buildings in Europe. They are surrounded by an estate of about 300 acres, which enables the simple massive beauty of the buildings to be fully appreciated. In close proximity to Parliament House is the residence of Viscount Craigavon, the Prime Minister of Northern Ireland, and also the recently-erected house of the Speaker of the House of Commons. A straight and wide processional road planted with trees on either side leads from the entrance gates, terminating on a terrace at the foot of a large flight of granite steps.

Proceeding from Stormont, the party headed towards Mount Stewart, passing through the industrial town of Newtownards, which of late has been much in the public eye by reason of the fact that it is included in the course for the great International Motor Race. To the west of the town of Newtownards lies the rocky hill of Scrabo, crowned by a tower erected in memory of the third Marquess of Londonderry.

On arrival at Mount Stewart an opportunity was given to inspect the famous and beautiful gardens in the residence of Lord Londonderry.

From Mount Stewart we proceeded through the little town of Gray Abbey, where may be seen the ruins of a Cistercian abbey founded in 1193 by Affreia, wife of Sir John de Courcy (first Earl of Ulster), on to Donaghadee—a town retaining its old-time aspect as a fishing centre. Here a halt was made for tea at the Mount Royal Hotel.

On the homeward journey was passed through Bangor—a favourite watering place, with an ideal situation on the shore of a pretty bay; thence to Holywood, a picturesque little town, and in a short time we were within the city boundary, and before one realised it a most enjoyable tour had come to an end.

A. McL.

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Delegates viewing the grounds at Mountstewart.

Dr. Bradley takes the day off at Kelsey.

THE WHOLE-DAY TOUR

Antrim Coast Road and the Giant's Causeway

Bent on obeying instructions to take us over the *best* part of Northern Ireland by 6 o'clock, a number of coach drivers with Daytona ambitions conveyed 160 happily anticipatory participants in Congress out of Belfast by York Street first thing on Thursday morning.

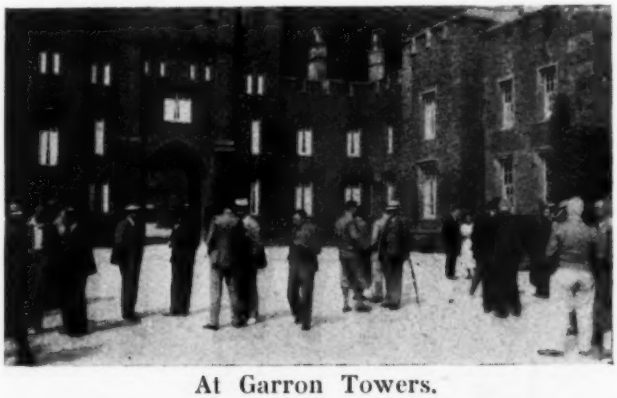
The Flax Spinning Company's Mill and Gallaher's Tobacco Factory secured the respectful attention of lady and gentlemen enthusiasts respectively. Travelling northwards towards Carrickfergus, between the loughside and the rocky hills and dales—still green and, as always in Ireland, unattacked by the wanness that assails English pasture at high summer—both our self-esteem and our admiration for the Irish peasant's interest in his country's major industry were stimulated by the somewhat remarkable evidence of public knowledge, not only of our presence in Ireland, but of the fact that the Minister of Agriculture's important warble-fly announcement had been made at our Banquet, provided by the spectacle of the whole population of the villages lined up to see us pass—moreover, not without cheers. Then we caught up with a travelling circus.

As this account is to be as informative as the guide book can make it, you are now to learn—and it serves you right if you were not with us to find out for yourself—that "the ancient and historical town of Carrickfergus is noted for its famous old castle, erected about 1178, and once of great military importance. King John, when a prince, once occupied the Castle in A.D. 1210. William III, Prince of Orange, first set foot in Ireland at Carrickfergus in A.D. 1690. The Parish Church of St. Nicholas, over 700 years old, is also of great interest. It would appear that, at one time, Carrickfergus was a Walled City."

Chalk Cliff, Antrim Coast Road

Leaving Carrick, we hurtled through the village of Bonneybefore; then the village of Kilroot transferred our thoughts elsewhere, as being the home of the author of "Gulliver's Travels," but a glorious glimpse of the County Down coast brought us back to present journeyings. By no means sorry to pass Whitehead, "a popular summer resort," and to ignore the information that the large Portland cement works at Magheramorne "are easily recognised," only Larne stood between us and the famous Antrim Coast Road. What has the guide book to say about this? "One of the finest roads on which a man can travel. It is spacious, in good condition." Retaining possession of the tome through sheer self-restraint, we really looked.

The Antrim Coast Road, convenient, inevitable, ateem with traffic, is the one blot on as perfect a scene—25 miles of it—as a man with an eye for the colour and contour of a sea-embraced mountain could wish for. True, the sun blazing down on green and blue raised a mist that reduced the far away Scottish coast to the vaguest of outlines, but a brave breeze blew the tang of the sea into the coach and freshened our appreciation of the glories of sea and shore. Gradually, the towering cliffs on our landward side gave place to over-arching sun-filtering avenues, and a reverential turn of the head towards Glenarm Castle, the seat of the Earl of Antrim, preceded the tree-girt ascent to Garron Towers. A lovely place this, deep set in noble woodlands, with a Lovers' Walk, ready for the hour when the tip of the crescent moon touches . . . . but a hundred and sixty chattering tourists had best be hurried inside; perhaps they will spare a glance from their consideration of cake and coffee for the magnificent carved panelling of the perfectly proportioned great hall.



At Garron Towers.

Odd bits hereabout from the guide book: *Ante Garron.*—"After leaving Larne we pass through Black Cave Tunnel and past the 'Devil's Churn.' Ballygally Head is rounded (note the splendid profile of a head on looking back shortly after passing Ballygally Castle).

Soon limestone cliffs rise before us, and rounding another headland and past the 'Madman's Window' the village of Glenarm is reached. A short distance further along we pass through Carnlough, another quiet but popular holiday resort. Not far distant will be seen the towering headland, Garron Point. We travel in the coach up and up until the plateau is reached, and Garron Towers."

Post Garron.—"Leaving Garron Towers we soon find ourselves passing the 'Silent Lady,' on to the Coast Road again, making for Waterfoot and Red Bay on to Cushendall, where we leave the coast for a time and go inland along one of the beautiful Glens for which the district is so noted."

Interlude at Garron Towers.

Let us leave the thing there; to be precise, on the parapet of Glendun Viaduct, and look up to wonder no more at the romance inherent in the poems of Moira O'Neill or the history of Shane of that name. To right and left the perfect curve of the valley, tapering away to heaven's level towards the south and—climbing upward from the stream—pasture, wood and moorland. This country's face always seems to wear the morning freshness, and how its colours glow in the sun! Our road, it seems, climbs Carrive Mountain, and up we go through beech groves, scarcely hiding the somewhat

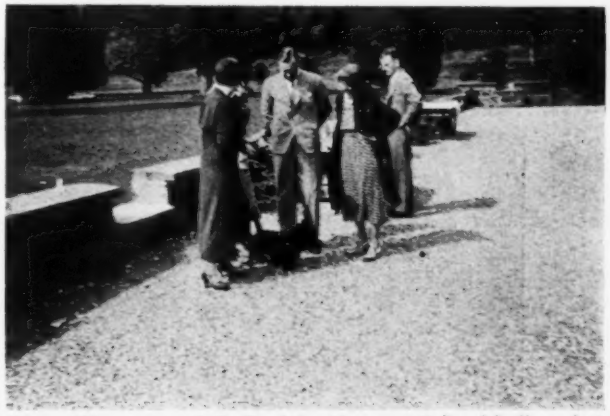
The newly-elected President, N.V.M.A., with Professor Wooldridge and W. Jackson Young at Garron Towers.

Garron Towers (general view).

curious combination of oak and holly behind. With St. John Ervine, we "are not interested in ironmongery, however fast it goes," but this morning we were at least grateful to it that it swept us through heather, showed us our first turf bog, and enabled us to verify our text-book conception of the local mountain sheep. And what a view! A perfect place for a day-dream . . . . "I think you left this behind." "Thanks."

"The vanishing lake is passed, and soon we leave the mountain behind as we approach Ballycastle, another very popular Ulster seaside resort. Facing us, as we approach Ballycastle, is Rathlin Island, with its white cliffs. It was on this island that Robert Bruce, after fleeing from Scotland, watched the persevering spider.

"On our extreme right is Fair Head. Passing through the town we are soon in the country, until we pick up the coast again at Ballintoy School. We are now high above the sea-level, but stretches of sand are clearly seen, on looking down at the sea shore. Shortly we will reach Giant's Causeway."



Mrs. Wragg and J. Smith discuss "Jock's" points (Garron Towers).

But much was to happen before then—lunch for one thing, taken out of order at Portrush. We are critical of resorts in general, but this particular one strikes us as worthy of a more æsthetic appreciation. The Trocadero, too, had

Some of the party wishing hard at the Wishing Well.

we travelled 600 miles from Shaftesbury Avenue for this? Still, swift service and good fare afforded us five minutes of pure joy hanging over the old Harbour Wall. The beauty of the coast line approach to the Causeway, where there are surely the deepest blue in water and the whitest in surf to be seen in the British Isles, played a fine prelude on our emotions. The downward road lay in the eye of the sun, but the toil of traversing it was lightened for many for the opportunity it afforded of stealing a march—for the first and doubtless the last time—on the Secretary of the Society of Veterinary Practitioners who had unwisely unearthed a pre-War wagonette. At the foot of the slope Fate cast up another guide—human this time, in form at least. "What you see before you may strike you as artificial, but as you penetrate, Nature will soon have you in her spell. There are three causeways, the

The Giants' Causeway Tour.

Little, the Middle or Honeycomb, and the Grand Causeway. How this wonderful collection of polygonal columns, set amidst such splendid surroundings, came into existence is not quite clear, but it is generally acknowledged that they are the result of a volcanic outflow which assumed the curious columnar shape when cooling. It is truly termed 'one of the wonders of the world'."

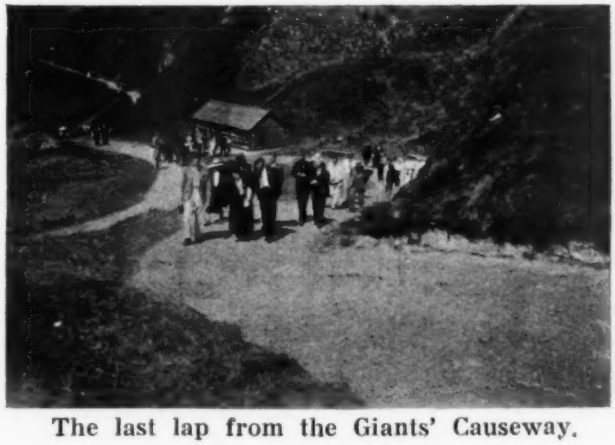
He was all right, however—doing his job of work well, but there are some appalling people in this world, and the very worst of them, with a camera, piled us all up round a confounded "wishing chair," and wasted half the afternoon driving his nefarious trade.

Only the blind are unfamiliar with every photographable aspect of this columnar curiosity, and there is no need to waste words on it—it is quite undescribable, anyhow. A heavy ground swell precluded our entrance to the caves, but there was passed around the intriguing information that in a storm the wave reverberations within can be heard two miles

The Giant's Causeway

Coast at Giants' Causeway.

inland. It provides indubitable testimony to the heat that one weighty member of Council suggested that it might be worth while to wait for one—a pathetic plea reminiscent of the Professorial protestation against undue haste heard all over the luncheon room—but the road home would brook denial no longer. All too soon, therefore, we were readily recognising the Causeway—Portrush Hydro-Electric Railway as the oldest in the British Isles. With the broad Atlantic on our right and Inishowen Head in County Donegal and the entrance to Lough Foyle in front of us we soon reached Portstewart, another lovely fishing village and seaside resort at the mouth of the River Bann, along which the road lay to Coleraine, in the centre of that *rara avis* in these days, a prosperous farming community. So we were reliably assured, despite the information—secured with difficulty from the now somewhat somnolent Local Secretary—that the Celts turned the Gaels out of the fertile lands of the south (" or it may have been the other way about "—Bradley), to the barren country in Antrim and Donegal. It was subsequently learned that peat stackers and flax pullers and even the far-famed Ulster large white pig claimed the attention of the diminishing number of those who remained awake on the somewhat featureless homeward inland route, but, happily for your space, sir, your Representative definitely was not one of these.—B.



The last lap from the Giants' Causeway.

IMPRESSIONS OF THE CONGRESS FROM A WOMAN'S POINT OF VIEW

Tired, sleepy and dirty we arrived in the early hours at Belfast, which was only just waking up. We wondered if it were possible to face the day's programme—the speeches at the opening of the Congress, a tour of the City and the reception in the evening—but once inside the walls of the Queen's University we were met by friendly faces and our weariness was soon forgotten. A warm welcome was given us by the Lord Mayor, the Chancellor of the University and our President, and there, Irish wit and geniality were at their best. The clerk of the weather was in a gay good humour for the whole week, and with a real Irish spirit we entered upon the full programme of tours, dinners, dances and sports.

We thoroughly enjoyed the three tours. Everything possible was done for our comfort, and to a mere woman they seemed a miracle of organisation. Surely this Congress was proof of M. Coué's belief that every day and in every way things get better and better, for the climax came on the Thursday with the tour along the coast road to Giant's Causeway, when even those who had been consistently upholding the reputation of the profession for hard work succumbed, and took life lightly for the day.

We were very sorry that the Lady Mayoress was not able to be with the Lord Mayor to receive us at their reception. The scene was impressive both for its colour and stateliness. It was fitting that the decorations of the men and the the lovely frocks of the women should be seen against a brightly lit background of marble. But was it the magnificence and splendour of the City Hall which seemed to subdue the spirits of even the livelier members of the profession—such was their air of grave formality! The mellowing effect of the sentimental tunes, old favourites played by the band, was noticeable, and later the profession was to be seen in its true colours.

On the following night was held the President's reception at the Grand Central Hotel. How we missed the spaciousness of the City Hall and regretted the prohibition laws!

With Wednesday came the Banquet given by H.M. Government of Northern Ireland, where the speeches were short and witty. The evening ended riotously in a dance, *not* under Government auspices. It was indeed a delightful surprise to discover that members of so scientific a profession could display such artistic talent in song and verse. This unscheduled feature proved a success beyond power of words.

It seemed hard that the dance held by the Ladies Benevolent Society should come at the end, when most people were wearied by the

previous functions and the strenuous touring of the day. Although our energy was impaired it was with great happiness and contentment that we danced away the last hours of the Congress.

Two of the visitors to the Congress enjoyed a little more of the Irish hospitality than the rest. By some stroke of genius they found they had crossed the border into the Free State by driving on unauthorised roads. They thoroughly enjoyed a meal whilst the car was under the eyes of two unsuspecting police, and it was not until they returned that they realised how nearly they had come to losing their car. They gaily shot through the customs and were brought back. Despite this and the lack of the necessary tryplique they found even custom's officers not unsusceptible to feminine charm and smiles.

Friday found us filled with a deep regret that we must say goodbye, and return to the mundane things of everyday life, but here's to the next Congress!

K. S.. M. McC.

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BY AIR TO THE CONGRESS

E. P. EDWARDS, M.R.C.V.S.
Mold

From London to Liverpool or Heysham by train, a night journey by boat, possible mal-de-mer, a stuffy cabin, scratch meals and arriving tired and unkempt in the early hours, was a prospect which dismayed, and I turned to the alternative offered—the "Way of the Eagle."

And verily to me it proved a "more excellent way" in the ten-seater Imperial Airways 'plane, bearing the proud name "Jupiter," in which I took my seat at Croydon on that Monday afternoon, crooning to myself:—

"He goes to the Congress
So snug and serene
Above the white clouds
In his flying machine."

The day is brilliant with sunshine, and soon the human hive below us is fading and giving place to a countryside through which winds the Thames, glistening and snake-like. Now, 30 minutes after our start, a "chit" is passed from the cockpit, telling us we are "7,600 feet up, air speed 140 m.p.h., Buckingham on our left"—I try my first aerial snapshot of Buckingham.

On over the heart of England, glimpsing the castles of Warwick and Kenilworth, we then come down to "terra cotta" outside Buckingham, recruit another passenger and are off again on the half-hour lap to Manchester. We now pass over many of those industrial centres so mean and ugly in reality, but in this perspective they appear as only comparatively minute blots on an otherwise beautifully wooded and lake-studded country.

The perspective, too, is merciful to individual objects; factories become almost castle-like, and I see a huge gasometer which looks for all the world like a round and tempting plum cake, ready for the tea-table.

The Isle of Man—Port Erin and Bradda Head on right; Castletown on Laugness on left.

There is just time to stroll about and smoke a cigarette before we leave Manchester, but, as we are due to come down again at Liverpool in ten minutes, we do not climb high, and so see things on a larger scale. There is the course of the Ship Canal as a straight and shining ribbon, dotted with cockle-shell ships, and then comes the vast estuary of the Mersey flanked by the Wirral Peninsula, and the Welsh mountains rising majestically to the peak of Snowdon, to form an impressive panorama. Here at Speke, the Liverpool aerodrome, we snatch a cup of tea, and are off again on the last and most glorious lap of our journey. We are not so high above Liverpool but that its Cathedral is distinctly recognisable, but, vast and impressive though it is, it must be confessed it now looks singularly paltry and inadequate to express what it stands for, and one is tempted to murmur, "*Sic transit gloria mundi.*"

Climbing quickly, we now follow the centre of the river Mersey with the great docks of Birkenhead and Bootle flanking us on either side, soon succeeded by a sight of distant Anglesea and then, only the open sea, the white fleecy clouds, ships like chessmen on the flat water, another 'plane far below glistening like a silver dragonfly, and, last but not least, the shadow of the "Jupiter" in the green mirror of the sea following us like the disembodied spirit of a great albatross.

It is fascinating, this fleeting shadow, for it is the only index of movement we have over the empty sameness of the sea, and yet it gives only a sluggard idea of our speed of 150 miles an hour, for it is over a mile and a half below us.

At this altitude, and over water, the "Jupiter" is delightfully steady, there are no air "bumps" or "sways" communicated from the land, and one has the sensation of floating in a frictionless ether.

A little later another "chit" tells us we are approaching the Isle of Man, and we descend to 6,000 feet as we pass over the narrow land which has Port Erin with its Bradda Head on the one, and Castletown on its other shore, with the Calf of Man as its "Lands End." The scene is unforgettable here, the tortuous rugged coast line, winding roads, the mapped fields studded with cottages, mansions and woods, all ringed by the emerald sea, combine to produce a vast picture-puzzle such as the fairies might have fitted together.

The whole scene is drenched in colour and my camera has only feebly recorded its magic beauty. We appear scarcely to have left Mona behind us before the Emerald Isle is in sight, low marsh lands at first, and then, "The Mountains of Mourne coming down to the Sea," with Slieve Donard challenging the sky in the westering sun. Now on our right, Belfast Loch and the city are spread to view, and the new Parliament House stands conspicuously on its hillside, but we skirt the city and come gently down at Alder Grove, just three hours and 20 minutes after leaving Croydon.

There has not been time to get tired, and certainly none to become bored, for rather has it been an afternoon visit to the super-cinema of the sky, with England and her sister Isles thrown on the screen below, for our wonder and entertainment.

Expensive, did you ask? From my enquiries of some who came the "weary way," the difference in cost is a bagatelle—the compensations priceless.

Now come the days of meeting old friends and making new ones, informative days, days—and nights—of concentrated interest, sociability and conviviality, which too soon come to an end, and, rather sadly, I pack up for my return home. But if anything consoles me in taking leave of friends and the warm Irish hospitality, it is the thought of enjoying my journey back on this smiling morning. As I get into my comfortable armchair our cheery pilot says that conditions are perfect, and soon this is verified, for the visibility is even better than on the inward journey, and now in reverse order we view again the wondrous pageant of "This England, this pearl set in a silver sea," and her sister Isles.

We are signalled not to descend at Birmingham, so head straight for Croydon, where we arrive dead on time, and at 1.30 I am sipping a cocktail in Piccadilly, "to my great content."

It will be to Scarborough next year, I hope, in a 'plane appropriately named the "Pegasus," and carrying a full complement of veterinarians —"off to the Congress, in comfort and ease."

IRISH HORSE-BREEDING INQUIRY

The Free State Government announce the appointment of a Commission to investigate the present conditions of the horse-breeding industry and to make recommendations for its improvement. Mr. Justice Wylie will be chairman of the Commission, which will consist of ten members.

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BRITISH STOCK FOR RHODESIA

The importation of British pedigree stock is being encouraged by the Southern Rhodesian Government. The decision is in line with the country's British policy: it also means that Rhodesia is determined that its herds shall be among the finest in the world. A Government regulation provides that for pedigree sires imported direct from the United Kingdom by breeders there will be a contribution in cases approved by the Minister of Agriculture up to half of the certified cost but not more than £50 for one bull or, in the case of rams and boars, £12 10s. The animal must have been approved by the Breed Society concerned in Great Britain as fit for exportation for stud purposes. The scheme came into operation in June of this year and will continue until March, 1936.

Operations and Demonstrations

It is pleasingly possible to write that this year, at least, the section of the Meeting devoted to operations and demonstrations on the Tuesday afternoon was an unqualified success from the point of view both of those concerned with revealing the value of the operative processes for which they were responsible and of those who assembled in large numbers to watch them. Such convenience and comfort were due to the perfection of arrangement achieved by Mr. J. Ewing Johnston, who kindly placed his commodious and admirably-suited premises in May Street at the disposal of the Provisional Committee.

. . . . .

An unexpected, but nevertheless very welcome visitor to the Congress this year was Professor Dr. Frost, who happened to be staying in Edinburgh the week before. His skill as an operator was well known as a result of his numerous publications and from reports by visitors to Ithaca last year after the International Veterinary Congress.

When it was decided, at the last moment, to have the roaring operation performed as one of the features of the Operation Day, the choice of operator was undecided. Fortunately, a telephone message from Belfast to Edinburgh late on Sunday night led to the decision to invite Dr. Frost to fill the gap.

It was not until Dr. Frost was *en route* for Belfast on the Monday morning that he first heard of the provisional arrangement. We owe him our sincere thanks for acceding to our request.

The fact that he had to operate with a scratch lot of instruments which he had never seen until the day of the operation and carried it through in a perfect manner, together with the cool and masterly handling of his animal, left no doubt in anybody's mind that we were witnessing the work of an expert surgeon.

Roaring Operation (Ventriculectomy) on a Hunter in the Standing Position using Local Anæsthesia

(By Dr. Frost, Professor of Surgery, New York State Veterinary College, Cornell University, Ithaca, U.S.A.)

The subject was a hunter. No history was available except that the horse was a roarer.

The animal was placed in a doorway, so that the head could be slightly elevated by a rope attached to the nose band of the head stall.

Twenty c.c. of 2 per cent. Novocaine solution was injected subcutaneously and through the underlying muscles down to the crico-thyroid membrane, the whole of the operation area thus being infiltrated.

After a short interval a linear incision was made in the middle line over the larynx, passing between the thyro-hyoid muscles. The crico-thyroid membrane was incised, and not until this was severed was a laryngeal retractor employed. As no self-retaining retractor was available, an ordinary retractor was used and held posterior to the wound by an assistant.

Before stripping the ventricles, the mucous membrane of each sac was anæsthetised by a small gauze swab soaked in local anæsthetic and introduced by forceps.

Dr. Frost explained that usually he injects local anæsthetic by means of a long needle connected by means of rubber tubing to a syringe. The swabbing of the ventricles, however, appeared in this horse to produce excellent anæsthesia, there being practically no excitement or discomfort throughout the operation.

By means of a small metal burr (a rubber burr is to be preferred) a quarter-of-an-inch in diameter, the saccule on the left side was grasped in the usual way and slackened completely. The everted ventricle was then grasped by curved forceps and by means of a pair of curved Mayo's dissecting scissors the mucous membrane was cut off at the level of the mouth of the ventricle.

The ventricles of both sides were removed.

The operation is practically the same as that to which we are accustomed in this country, except that the horse remains standing and only local anæsthesia is used.

Explanations made by Dr. Frost whilst operating:—

(*a*) The majority of horses can be operated upon standing, but horses which resent being handled about the head should be cast.

(*b*) Diagnosis of roaring can be checked up by palpation of the larynx from the exterior. This point was explained more fully at the meeting when unsoundness was discussed and will be referred to there.

(*c*) The mucous membrane of the ventricles requires to be well slackened before excision, and there is no advantage to be gained by cutting away anything more than the ventricular membrane.

. . . . .

Removal of a Dermoid Cyst

(By Professor W. M. Mitchell, Edinburgh)

The subject for operation was a two-years-old filly, of medium draught type, with a soft fluctuating swelling situated over the lateral and lower part of the zygoma on the left side,

just above the temporo-mandibular joint. The swelling was only about one-and-a-half inches in diameter and caused merely an unpronounced surface elevation. A very small sinus was present about the centre, and pressure on the swelling caused a greyish mucoid material to escape by this opening. This sinus had been present for at least seven months.

Six somewhat similar cases of swelling have been met with in the district where this horse was bred, the sinuses in all cases being the same, and two such cases revealed on operation a cystic cavity containing, in addition to glairy fluid, a definite recognisable molar tooth, epidermis and hair; that is, they were cases of so-called dentigerous cysts.

It was expected that this case would also reveal a rudimentary tooth.

Preparation of Animal.—The field of operation was shaved the day before and the animal kept without food for 24 hours. About 20 minutes before casting the filly was given chloral hydrate ʒvi in half-a-gallon of tepid water by means of the stomach tube.

After casting anæsthesia was produced by repeated small doses of chloroform administered through a Cox's muzzle.

Operation.—After an application of tincture of iodine to the field of operation, a large sterile cloth containing a window was fixed by means of towel clips, so as to give a good exposure of the field of operation.

A linear incision opened into the swelling and exposed a cystic cavity lined with a delicate black pigmented skin. Exploration of the deepest part of this sac by means of a probe led to the discovery of a small sinus track going deeply into the tissues just behind and above the temporo-mandibular joint. After the wall of the cyst was removed by dissecting, the deep sinus was opened up and found to run, after a course of about an inch, into a second cystic cavity lined similarly to the first. The whole of this sinus track and the wall of the second cyst were dissected out, but there still remained another small sinus track which tended to run forwards on the medial aspect of the temporo-mandibular joint and appeared to end blindly.

The limited amount of space in this angle, the proximity of the facial nerve coming from below the parotid gland and the temporo-mandibular joint made a clean opening up of the deepest part of the sinus tract impossible, and the final surgical procedure was to curette this deepest portion by means of a spoon curette. No rudimentary tooth was found. After swabbing out the cavity it was packed with gauze wrung out of acriflavine 1 : 1,000, and the linear skin incision was closed by means of a row of interrupted silkworm gut sutures.

Demonstration on Spinal (Epidural) Anæsthesia in a Cow

(By Professor T. G. Browne, Dublin)

Professor T. G. Browne, before giving this demonstration on the live animal, displayed a carefully dissected specimen of the lumbar, sacral and coccygeal regions of a cow on which he demonstrated the origins of the nerves which supply the pelvic organs and hind limbs. He emphasised the fact that the spinal cord, with its coverings, extends back in the vertebral canal only as far as the middle of the sacrum, so that there is no danger of injuring the cord with the needle, the injection being made a considerable distance behind this point, that is, through the space in front of the first or second coccygeal vertebra.

This method of anæsthesia consists in introducing a solution of a local anæsthetic into the vertebral canal outside the coverings of the cord, *i.e.*, into the epidural space, by means of a needle passed into this canal usually through the interarcual space between the first and second coccygeal vertebræ or between the first coccygeal vertebra and the sacrum. The injection is not made into the cerebro-spinal fluid in the subarachnoid space as it is in spinal anæsthesia in the human, so that on this account it is a much simpler operation than that in the human and the risks are much less.

The epidural space contains semi-fluid fat through which the injected anæsthetic percolates forward immediately after injection and the distance to which it will pass forward will depend on the quantity injected. As the anæsthetic passes forward it anæsthetises the roots of the nerves coming from the posterior part of the spinal cord so that the pelvic organs, the tail and in some cases the hind limbs are for the most part temporarily deprived of their nerve supply. The anus and vulva become relaxed and the rectum and vagina ballooned. These organs lose their power of contraction and their sense of pain, so that manipulations can be carried out *per rectum* or *per vaginam* without straining or evidence of pain on the part of the animal. The act of straining, that is, the spasmodic contractions of the abdominal muscles and diaphragm, is a reflex action the afferent nerves for which come from the vulva, vagina, anus and rectum, so that when these nerves are anæsthetised straining is abolished during manipulations.

Spinal anæsthesia has no effect in relaxing the cervix of the uterus.

The nerves which supply the hind limbs and also those which are responsible for contracting the uterus come off from the cord further forward than those which supply the pelvic organs (those to the uterus come off from the lumbar region of the cord *via* the sympathetic

system) so that by regulating the dose of the anæsthetic injected it is possible to anæsthetise the pelvic organs and thereby abolish pain and straining, during manipulations of these organs, without interfering with the normal tone and contractions of the uterus and without paralysing the hind limbs.

In some operations, however, as those on the mammary gland or penis, it is necessary to give a larger dose, which will result in paralysis of the hind limbs; therefore in these cases the animal must be cast beforehand.

The regulation of the dose is a most important part of the procedure, because if a large dose be given, control of the hind limbs is lost and the animal goes down and the uterus loses its normal powers of contraction. In most operations where spinal anæsthesia is used it is desirable that the animal should remain standing and it is never desirable to abolish the tone and contractions of the uterus, particularly in cases of dystokia and in replacing an everted uterus. In the latter condition when the nerves to the uterus are blocked the replaced organ remains uncontracted and ballooned. Involution is thus prevented and the organ then acts like a foreign body in the pelvis so that re-eversion is likely to take place.

Some experience is necessary in regulating the dose so as to maintain the tone of the uterus and the control of the hind limbs, since the necessary quantity will vary to some extent according to the size and condition of the animal. A larger dose is of course necessary in the larger animals and in fat animals a little larger quantity should be injected, since there is more fat in the vertebral canal (epidural space), this retarding the passage forward of the anæsthetic. When making the injection the needle may be left in position for a time and the dose increased if found necessary after 20 to 30 minutes.

There are several anæsthetics which may be used for this purpose as, for example, Procaine or Novocaine 1 per cent. to 2 per cent. solution, but the cheapest and the one which is usually employed is a special preparation prepared by Messrs. Parke, Davis & Co., Ltd., called "Parsetic" (a preparation of ethocaine and adrenalin.) It is supplied in two-ounce bottles with rubber caps, containing sufficient for four or five average injections in the cow. The cost per bottle to veterinary surgeons is about 3s. 6d. The ordinary dose varies from 7 or 8 c.c. in the case of a small shorthorn to 17 or 18 c.c. in the case of a very large animal, but should the operation necessitate the animal being in the recumbent position then a much larger dose may be administered; even over 100 c.c. may be given without risk of the exhibition of toxic symptoms. The margin of safety is thus very wide in the use of this agent. It is important to note that it may deteriorate if kept in stock for a few months, when it loses its action and becomes of a yellowish colour.

The needle used for making the injection should be 8 to 10 cm. (3 to 4-in.) long with an external diameter of about 1·27 mm. A needle of the ordinary hypodermic type will suit, but Messrs. Arnold & Sons have on the market a special needle for this purpose with a stilette (as demonstrated). When the stilette is withdrawn the needle is adaptable to an ordinary record syringe. It is graduated in centimetres and this serves as a guide as to the depth to which the needle has been inserted.

It is convenient to carry the needles and syringe in spirit cases so that sterilisation of these instruments is then unnecessary; otherwise they must be boiled before use.

The injection is usually made with the animal in the standing position, but in cases where it cannot be induced to stand the injection must be done with the animal recumbent. An assistant holds the tail horizontally and in alignment with the sacrum.

The location of the site is found by moving the root of the tail up and down or from side to side; the point of freest movement indicates the sacro-coccygeal junction, which is represented by a depression between the extremity of the sacrum and the spinous process of the first coccygeal vertebra. Immediately behind the spinous process of the first coccygeal vertebra, that is, between it and the spinous process of the second, is another depression. The latter depression is nearly opposite the highest point of the tuber ischii (sciatic tuber). The injection may be made in either of these two depressions, but that between the first and second coccygeal vertebræ is usually selected as being the more convenient.

The hair is clipped and the skin sterilised. The needle is inserted at the posterior third of the space and is pushed steadily downward and forward at an angle of about 60° or less with the horizontal, care being taken to keep it exactly in the middle line. When it has passed to a depth of about one-and-a-half inches in the case of the space between the first and second coccygeal vertebræ or about two inches in the case of the sacro-coccygeal space, it will be found to strike the bony floor of the canal. When the point of the needle enters the canal the sensation of entering a cavity is apparent, the resistance suddenly diminishing. If the canal has been entered the injection of the fluid demands scarcely any pressure on the piston of the syringe, but should the point of the needle not be in the canal expulsion of the fluid from the syringe is difficult. The procedure is not very painful.

Another site at which the injection may be made is the lumbo-sacral junction, which is indicated by a depression slightly anterior to the level of the highest points (sacral tuberosities) of the ilia. The needle is inserted vertically in the centre of this space and passed to a depth of about three inches. This operation is more difficult than in the case of the other sites as the needle must be passed to a greater depth and it has the disadvantage that, being far forward, the injection will always involve the nerves to the hind limbs so that the animal will always go down.

When the anæsthetic is injected into the canal the tail shows evidence of loss of control within a few minutes and then the anus and vulva become relaxed and within about 15 to 20 minutes the pelvic organs have become involved. The maximum effect lasts for about one hour and then it begins to pass off and has usually disappeared by the end of the second hour.

One may have occasional failures in effecting a successful injection, due to faulty insertion of the needle—as in failing to direct the needle precisely in the middle line, or the point of the needle may become embedded in the intervertebral cartilage or in the fatty tissue at the floor of the canal—in which case the needle should be withdrawn a short distance. A few exceptional cases have been recorded where the injection could not be effected at the usual site, due probably to previous injury causing deformity of the coccygeal vertebræ at the root of the tail. Occasionally the injected anæsthetic fails to act properly, the cause here usually being the escape from the vertebral canal through the ventral sacral foramina, as has been proved experimentally to occur occasionally; or the failure of action may be due to the anæsthetic having lost its potency through deterioration.

If the injection must be made while the animal is lying she should be put in the sitting position and not allowed to incline to either side for about ten minutes after the injection, for if she is allowed to remain on one side the fluid will flow to the more dependant side of the canal and will therefore anæsthetise the nerves of that side more than those of the other.

Spinal anæsthesia may be used in any operation on the posterior quarter of the body, including the mammary gland or the sheath or penis, but it is particularly useful when reducing an everted uterus or a prolapsed rectum and in preventing pain and straining in cases of dystokia or during removal of retained fœtal membranes. It is also of service in facilitating inspection and manipulation of the genital organs and irrigation of the uterus in cases of sterility. In operations on the penis it relaxes the retractor penis muscles and thus brings about protrusion of the organ.

In cases of post-partum straining repeated injections may be given to prevent eversion of the uterus from taking place. Another advantage of spinal anæsthesia is that it paralyses the rectum so that no fæces are passed, and this aids surgical cleanliness.

The advantages of spinal anæsthesia over general anæsthesia are that it is simple, without danger, can be used by a practitioner working single-handed, and that in most cases the animal remains standing.

This method of anæsthesia has been used with success in all the other domesticated animals.

The animal used for this demonstration was a large shorthorn cow in fat condition. Fourteen c.c. of "Parsetic" was injected through the space between the first and second coccygeal vertebræ, using the technique described above. The anus and vulva became relaxed and the rectum and vagina ballooned within 15 minutes.

The vagina and cervix were inspected and found to be affected with vaginitis and cervicitis respectively, a splendid view of which was obtained by the aid of a speculum to which an electric bulb was fixed. The irrigation treatment for sterility was carried out with great facility, there being no straining or evidence of pain on the part of the animal. This animal had been under treatment for sterility by Mr. H. G. Lamont, so that the latter part of the demonstration was carried out by him, assisted by Mr. W. R. Kerr.

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Demonstration of Anæsthesia and Surgical Technique in the Dog and Cat

(By Professor J. G. Wright [London], assisted by Miss B. L. Lock [Farnham])

(1) DOGS

A.—Operation—*umbilical hernia.*

Anæsthesia—*intravenous nembutal.*

Subject.—Young adult Airedale male. The solution of nembutal was made immediately before use in the strength of 1 grain to 1 c.c. The left recurrent tarsal vein was used, and the injection made slowly. Anæsthesia was present at two minutes, 9·5 grains of nembutal having been injected. Attention was drawn to the method of restraining the animal and the necessity for overcoming any movement of the limb during injection. The needle used was 12 mm. long and 0·5 mm. external bore. Induction was perfectly quiet.

The degree of anæsthesia was assessed by observing relaxation of the lower jaw, and the pedal reflex. Immediately the latter was lost anæsthesia was considered to be of sufficient depth.

The lesion was an umbilical epiplocele of the usual type, the size of a walnut. It was irreducible. The ring was approximately 5 mm. in diameter.

The case was complicated by previous operative interference, the incarcerated omentum being firmly adherent to the subcutaneous tissue.

A longitudinal incision, two inches long, was made through the skin, and dissection carried out down to the hernial ring, fully exposing the herniated omentum. Two incisions, each half-an-inch long, were made through the abdominal muscles and peritoneum, commencing at the margin of the ring and extending in an anterior and posterior direction. These facilitated the separation of adhesions from the tendinous edges of the ring. As the herniated omentum had become damaged during dissection it was ligated (No. 2 silk) and removed.

The abdominal wound was closed by two layers of sutures, using No. 2—14-day gut, the deep one including peritoneum and abdominal muscle, and the superficial one the skin.

Discussing the operation, the operator stressed the necessity for completely separating the adherent omentum from the edges of the hernial ring. "Freshening" of the margins of the ring and its subsequent occlusion by suture, is greatly facilitated by incision of the abdominal wall anterior and posterior to it, the abdominal opening having become linear rather than circular. Gut was used in preference to silk to overcome the tendency to post-operative deep suture abscess formation.

B.—Operation—*extirpation of right eyeball.*
Anæsthesia—*intravenous nembutal.*

Subject.—Adult Kerry-blue terrier male. The whole of the cornea was involved in a chronic ulcerative keratitis.

As in the previous case, intravenous nembutal anæsthesia was employed, using the same technique of administration. Six grains gave full anæsthesia. The animal was placed on its left side, the head being raised and supported. An incision, a quarter-of-an-inch long, down to and including the conjunctiva, was made at the outer canthus, thus enlarging the aperture of the lids. The upper palpebral conjunctiva at the outer canthus was gripped by fixation forceps held upwards by an assistant, whilst the operator picked up the bulbar conjunctiva, just in front of its reflection, with dissecting forceps. Between these two the conjunctiva was incised, using a Bard-Parker scalpel, No. 12 blade. This incision was continued over the upper aspect of the eyeball to the inner canthus. Fixation forceps were next applied to the edge of the incised bulbar conjunctiva about the centre of the upper margin, and traction exercised. This facilitated cutting of the superior and external straight and the superior oblique muscles of the eyeball. Further traction facilitated cutting of the retractor oculi together with the optic nerve, which lie in the depth of the orbit and slightly towards the inner canthus, with half-curved scissors. Consequent upon cutting the central artery of the retina hæmorrhage was now profuse. Once the retractor muscle and the optic nerve have been severed the eyeball can be completely rotated on its transverse axis, and drawn well out of the orbit. Complete removal is effected by cutting around the lower attachments (muscle and conjunctiva), including the third eyelid, with half-curved scissors. In view of the purulent conjunctivitis present it was decided to make no attempt to occlude the aperture by removing the edges of the lids. Should it be considered that the animal's appearance will be improved by so doing, a second operation may be carried out when the orbit is healthy.

Hæmorrhage was controlled by packing the orbit with gauze held in position by three sutures through the lids.

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Three hours after operation anæsthesia was rapidly lightening, whilst the following morning the patients were normal.

(2) CATS

C.—Operation—*oöphorectomy.*
Anæsthesia—*ether-oxygen.*

Two female kittens, 4-5 months old, were speyed, using ether-oxygen anæsthesia. A stream of oxygen from a cylinder was passed through ether, a metal mask of the operator's design being employed. Discussing the method of anæsthetisation, it was stated that this was considered to be the most satisfactory method for abdominal operations of short duration. It was pointed out that ether and not chloroform was used. Ether was three times less toxic than chloroform and provided it was used with discretion was almost foolproof. Its great disadvantages were: (*a*) the marked struggling it was liable to provoke during induction, and (*b*) the difficulty in keeping an animal smoothly and continuously anæsthetised.

It was claimed that the method overcame these difficulties. A pumping apparatus sprayed the animal's face with a concentrated and irritating ether vapour, whilst with open methods it was difficult to obtain a concentration sufficient to induce anæsthesia within a reasonable time. With this apparatus the animal inhaled a mixture of ether vapour, oxygen, and some of its own carbon-dioxide (re-breathed). The mixture was not particularly irritating, and in both demonstrations voluntary struggling, which was at no time violent, had ceased in two minutes. Anæsthesia was present at four minutes.

It was further claimed that for operations

rapidly performed (ten minutes at the outside), there was no need to alter the concentration throughout, the ether concentration in the blood at the end of the operation being quite a safe one. If the mask was removed whilst final suturing was in progress the animal would be rapidly recovering by the time it was completed.

Discussing atropinisation, the operator stated that in his experience it was unnecessary. He had had no cases of post-anæsthetic bronchitis or pneumonia. In the dog, however, he invariably administered atropine, and generally morphine, prior to etherisation.

The operative technique adopted was exactly the same as that described in *The Veterinary Record*, 1933, Vol. 13, No. 51, pp. 1370-1381. The kittens being immature, no ligatures were employed, the ovarian and uterine arteries being occluded by forci-pressure. Three sutures (No. 0 silk) served to close the wound: one including the peritoneum and the internal oblique muscle, and the other two the skin, subcutaneous fat and external oblique muscle. The operator advised closing the peritoneum and internal muscle separately. If the skin only was sutured there was a tendency for omentum to find its way between the edges of the muscle wound to form a post-operative hernia.

Stress was laid upon the following points: The exact position of the incision. The necessity for being gentle with the tissues, taking care not to mutilate subcutaneous and retro-peritoneal fat. The method of locating the deep cornu, and the need for care that it is not torn and the ovary thus lost, when drawing it through the incision. Finally, having mastered the technique, operate with speed and precision.

The risk from the operation was negligible. In the speaker's clinic at the Royal Veterinary College the mortality in a record of many hundreds of cases was less than 1 per cent. (The greatest danger lies in operating upon an animal which is suffering from feline distemper. The history of the kitten's health should be carefully ascertained and its temperature taken before operating.)

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Professor Wright, throughout these operations, used the bins of sterile cloths, swabs, dressings, etc., prepared by Messrs. Arnold and Son. He pointed out that the piece of batiste material served as a sterile surface upon which to place instruments, etc., whilst dry cloths and swabs had many advantages over wet.

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Exhibits from the Stormont Laboratories

Owing to the very full programme arranged by the Provisional Committee it was not found possible to fit in an official visit to the Veterinary Research Laboratory at Stormont. The Director (Mr. Lamont) readily agreed, however, to exhibit some specimens in the University and also stage demonstrations likely to be of interest to the general practitioner.

"As one who had the pleasure of seeing these specimens" (writes a visiting member) "I should like to congratulate Mr. Lamont and his staff on their general excellence and interest. The specimens were beautifully preserved and mounted. Some very fine specimens of bovine tuberculosis were on view. The bovine sternum with a tuberculous centre was particularly interesting.

"The poultry specimens were really fine. The 'string' of tuberculous 'neck' glands aroused some controversy as to whether these were thymus or lymph. The demonstrator suggested that I should consult both Dr. Bradley and Professor Browne on this point—I wonder . . .

"An interesting collection of micro-photographs of oöcysts in various stages and invading the glandular epithelium of the intestine was on view. One is puzzled to know how the various types of oöcysts are 'spotted.' I noticed among other things, 'orf' specimens, a pregnancy disease liver (very interesting indeed), an enormous tuberculous heart and pericardium, a swine erysipelas heart, roup specimens, a fowl-paralysis ovary (lymphomatosis), a lympho-sarcomatous kidney, a bacillary white diarrhœa ovary contrasted with a normal ovary (again most instructive), a remarkable kidney and bladder showing the effects of calculi, a gouty heart and joint, a very fine leukæmic fowl showing the enormous liver enlargement, etc., etc.

"The anæmia specimens were particularly interesting to me and it was most instructive to learn of the investigations which are being made in Northern Ireland. Anæmia in pigs in Northern Ireland is called "Blows" popularly (this, of course, has no connection with the political situation), and I understand that Mr. Lamont showed that this disease was identical with the lactational anæmia of other countries. I was fortunate indeed to be present to see Professor Baskett demonstrating in his very capable manner, the colorimeter and hæmoglobinometer which are used in these investigations. It was very pleasant indeed to note the cordial relations which exist between his department (Animal Nutrition, Queen's University) and that of Mr. Lamont.

"The agglutination tests were extremely interesting and one was greatly struck with the ingenious apparatus used in connection with bacillary white diarrhœa work. I remembered reading a description of this apparatus in *The Veterinary Record*, but 'seeing' undoubtedly is 'believing.'

"The milk exhibit was a splendid idea and should have fine educational results. It enabled

us all to realise the types of examination to which milk is submitted, and the standards insisted upon in the various grades. Northern Ireland is indeed fortunate with its simplicity of grades (Grade 'A,' Grade 'B' and Grade 'C').

"The examination for worm eggs and oöcysts was very simple and effective and one which any practitioner could make. It completed an interesting programme, and I should like to pay tribute on behalf of the many members who saw the specimens, through the week, to the courtesy of the demonstrator."

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A Visit to the Veterinary Research Laboratories, Stormont

Belfast was no exception; there were delightful informal conversations and hastily-arranged visits to places of especial interest to a few. A number of us spent a very pleasant hour at the Veterinary Research Laboratories at Stormont on Wednesday afternoon.

The single-storey building is a conversion from that which formed part of the stables, etc., at Stormont Castle. It had obviously been adapted and fitted by a practised hand, but the space available appeared quite out of proportion to the work on hand. Stone and mortar cannot do research work; ample accommodation can facilitate it. The Government of Northern Ireland take pride of place in the full utilisation of veterinary services for field work and we imagine that the provision of more complete facilities for their research workers will not be long delayed.

The laboratories have made their mark in the lead which they have given in the control of poultry diseases. Their system of testing to detect carriers of bacillary white diarrhœa has been the envy of many from this side of the Irish Sea. The number of blood tests exceeds 160,000 per year and some 3,000 carcases are received for *post-mortem* examination. The veterinary officers send milk samples to the laboratory for microscopical and biological examination and the normal yearly total of 1,300 milk samples will, in the near future, be greatly exceeded.

Advisory work in connection with diseases which occur as outbreaks, particularly diseases of poultry, pigs and sheep, are a feature of the laboratory's work. In this way, it has easy means of access to material for investigation and is kept fully informed as to the disease position in the six counties. The supervision of tuberculin testing in graded herds has, in recent years, occupied much time.

On the research side, the work which has attracted most public attention in recent years is the extensive test of the Spahlinger vaccine for tuberculosis, and we look forward with great interest to the forthcoming report on this work. On this visit we were introduced to the method of preparing a new type of vaccine against contagious abortion, to mysterious pig diseases and to other investigations. We wondered how a staff of four veterinary workers could, in these buildings, *make* time to supervise all the routine work, do so much advisory work and yet keep the enthusiasm so necessary for their research work. The secret seemed to lie in the delightful team spirit which, so very obviously, existed between Mr. Lamont and his colleagues.

R. F. M.

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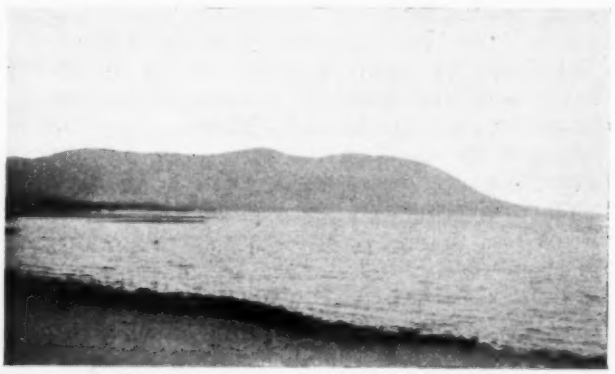
Abattoir Visit

On Monday afternoon a party of about 40 members visited the Belfast Abattoir and were conducted around by Captain Alex. McLean, the City Veterinarian, who is also the abattoir manager.

Slaughtering was in full progress and members had an opportunity of seeing conditions on an ordinary working day, which is preferable to the prepared demonstrations so frequently exhibited. They enquired into several features of management and meat inspection methods. Two points of interest were made clearly apparent; first, the effectiveness of electrical stunning of the small animals and, second, the benefits of absolute unity of control obtained by vesting in one officer the duties of meat inspection and administration.

View of Irish Free State from Warren Point.



View of County Down (Northern Ireland) from Warren Point.

EXHIBITION OF DRUGS, INSTRUMENTS AND APPLIANCES

A SPLENDID DISPLAY

Although the premises occupied by the Exhibition were perhaps somewhat "off the beaten track" to the sessional hall, the great majority, if not all, of the members visiting Belfast spent an appreciable portion of their time at the University in examining the exhibits so effectively arranged by the representatives of the firms concerned, on the fine array of stands.

Opening by the President

This took place in the Examination Hall of Queen's University, Belfast, at 10.30 a.m. on Monday, July 29th, 1935, in the presence of a large company.

The President (Professor J. F. Craig) said: The firms who have staged these exhibits have come at great trouble and some expense, and naturally they wish you to show your appreciation of their presence and of their exhibits. To-day we are largely dependent upon progressive firms for the drugs we use in practice. Many of them coming into use you will find represented in the stalls here. Most of us are anxious to get new instruments that are more perfect than those which we have used hitherto, and you will find many here of great interest to you.

Members will show their appreciation of the Exhibition if they pay frequent visits to this place. We are well acquainted with the representatives of the firms here, and some of them you will regard as old friends. We are glad to see them. (Applause.) I hope that you will show that you appreciate the attendance of the firms and their exhibits by coming often to the Exhibition. The times at which the Exhibition will be open are to some extent limited and I would like you to make yourselves aware of them so that no disappointment will ensue. Formally, I declare this Exhibition open. (Applause.)

At the close of this opening a beautiful bouquet was presented to Mrs. Craig by Master David McLean, son of Captain A. McLean, the City Veterinarian, Belfast.

The President, returning thanks, said: I would prefer that my wife thanked you in her own words. She can speak quite well herself to me, and I would prefer that sometimes she would speak to other people. (Laughter.)

Mrs. Craig then expressed her appreciation of the gracious compliment thus paid her by the Exhibitors.

The Stands

Anglo-American Pharmaceutical Company, Ltd., Dingwall Road, Croydon. This enterprising firm were again showing a large range of their preparations. Of the many on view the following have achieved much popularity with the profession: Huxley's plasma dressing, Velodyne colicide mixture, ung. iodoleine, mist. bismuth et pepsin, antiseptic powder for dressing wounds, alterative and tonic syrup for dogs, special skin ointment for dogs, dog shampoo, etc. The firm supply the above preparations with the client's name and address. These and other lines are offered at competitive prices consistent with the highest standard of quality of ingredients and super-finish of external appearance.

Arnold & Sons (Savory & Moore, Ltd.), Standard Works, Lawrence Road, Tottenham, N.15. In a very fine display, which attracted much attention, this well-known firm exhibited all kinds of veterinary instruments and appliances such as scissors, dressing forceps, operating knives, embryotomes, emasculators, castrating instruments, pocket cases of instruments, chloroform masks, ether masks and many other articles that are used in the veterinary profession.

Armour & Company, Ltd., Armour House, St. Martin's-le-Grand, E.C.1. Upon this stand a comprehensive range of glandular preparations was displayed.

Considerable interest was shown in "Spleen Extract" in the treatment of eczema and urticaria in the dog, and for canker and grease in the horse. Recently there has been an amount of work done in spleen therapy in cases of interstitial keratitis in the dog; good results have been reported.

The Armour product with the greatest appeal to the veterinary surgeon was the new sterilised catgut suture affixed to an *eyeless* needle, supplied in a sealed glass tube. These sutures cause the very minimum of trauma in operative work—they are supplied in all sizes on straight, curved or half-circle needles. A descriptive booklet is obtainable from the Laboratory Department of the company.

Burroughs Wellcome & Co., Snow Hill Buildings, E.C.1. The continued progress of veterinary science, especially in the field of prophylaxis and treatment of animals by means

of sera and vaccines, was exemplified in the exhibit of Burroughs Wellcome & Co.

On the subject of lamb dysentery two important products of original research were shown: "Wellcome" Lamb Dysentery Prophylactic (Vaccine) and "Wellcome" Lamb Dysentery Serum. "Wellcome" Lamb Dysentery Prophylactic (Vaccine) is made from organisms isolated from lambs affected with lamb dysentery. In carefully controlled field experiments, ewes injected once during autumn before tupping time and again once during pregnancy, as near to lambing time as possible, have produced lambs among which the death-rate from lamb dysentery has been reduced to a low figure, whereas the lambs born from uninoculated ewes on the same farms and kept under the same conditions have died at the usual rate. In some instances the death-rate amongst lambs from uninoculated ewes has been as much as 15 times that amongst the lambs of vaccinated ewes. "Wellcome" Lamb Dysentery Serum is made in horses, and controlled field experiments show that its injection gives almost complete protection against lamb dysentery.

"Wellcome" Improved Braxy Prophylactic has been thoroughly tested in the laboratory and in the field. Approximately 7,000 hoggs were kept under observation; the mortality has been 8 per cent. in the unprotected and 1 per cent. in the inoculated on the same farms.

"Wellcome" Anti-Leptospira Serum (Canine) and "Wellcome" Leptospira Vaccine (Canine) were also exhibited. Laboratory experiments have shown that dogs given many fatal doses of the infecting organisms could be saved by Anti-Leptospira Serum administered intraperitoneally up to the fourth day after infection, but no later. "Wellcome" Leptospira Vaccine (Canine), which has been prepared in laboratory experiments, produces a high degree of active immunity in dogs.

It is interesting to note in connection with "Wellcome" Ergometrine, the crystalline alkaloid recently isolated from aqueous extract of ergot, that reports have reached Burroughs Wellcome & Co. on the successful use of "Tabloid" Ergometrine in canine practice. It is stated that the new alkaloid is "not only less trouble but actually more effective than pituitary extracts." Examples of "Wellcome" Ergometrine were shown.

"Wellcome" Canine Distemper Prophylactics and Serum occupied a prominent position on the exhibit. These materials, the issue of which is confined to veterinary surgeons, comprise "Wellcome" brand Distemper Prophylactic Vaccine, "Wellcome" brand Distemper Prophylactic Virus (Dried), "Wellcome" brand Distemper Prophylactic Diluting Fluid for Dried Virus, and "Wellcome" brand Prophylactic Serum.

For the treatment of erysipelas in pigs, "Wellcome" Swine Erysipelas Serum has proved of high value, and as a prophylactic measure "Wellcome" Swine Erysipelas Vaccine (Living) should be used on healthy pigs in non-infected premises. As a first injection the vaccine should be used in conjunction with the serum by means of the serum-simultaneous method, full details of which are given in a booklet issued by Burroughs Wellcome & Co.

Among the other important subjects dealt with in the exhibit were blackleg, bacillary white diarrhœa, blackhead in turkeys, fowl pox, tetanus, bovine tuberculosis, etc.

All serological products distributed by Burroughs Wellcome & Co. are prepared at the Wellcome Physiological Research Laboratories, Langley Court, Beckenham, Kent.

It should not be overlooked that Burroughs Wellcome & Co. issue a large number of "Tabloid" products which, although intended originally for oral administration to human beings, are exceptionally well suited for administration to the smaller domestic animals. Amongst the outstanding advantages of these "Tabloid" products for oral administration are a standard of purity, accuracy of dosage and therapeutic efficiency which is exceptional even in pharmaceutical preparations of high repute. These advantages make "Tabloid" products of particular value in the treatment of highly-bred dogs, cats, etc., the dosages in which they are issued being suitable for the smaller domestic animals. Compactness, portability and keeping quality are other advantages of such products as "Tabloid" cascara sagrada, "Tabloid" santonin, "Tabloid" Easton syrup and many others.

Canine Insurance Association, Ltd., 57, Gracechurch Street, E.C.3. We are glad to note that this Insurance Association are now to be seen regularly at the annual Exhibition.

During the past twelve months really surprising and substantial progress has been made by the Association in every sphere of its activities. From a small private company formed three years ago it has grown to a public company with an authorised capital of £75,000. There is undoubtedly a very big field open to the Association in view of the increasing number and value of dogs and it is unquestionably building up a very valuable goodwill.

A much larger number of veterinary surgeons now meet the Association in the ordinary course of practice and the fair manner in which claims are dealt with is a matter of satisfaction to all concerned.

The Association report that they greatly value the very helpful co-operation of veterinary surgeons and that their connection with the profession is growing in a most encouraging manner.

The scope of the insurance now made available in the Association's policies can certainly be fairly described as comprehensive, as the following résumé illustrates.

Section 1. Death by Fire, Lightning and Accident (including Transit by Air, Sea, Road or Rail and all Show Risks).
Payment of full sum for which dog is insured.

Section 2. Death by Disease or Sickness (excluding poisoning).
Payment of full sum for which dog is insured.

Section 3. Death by Distemper.
Payment of full sum for which dog is insured.

Section 4. Breeding.
(*a*) Death by Whelping: Payment of full sum for which bitch is insured.
(*b*) Loss of Litter: Where a bitch insured for a sum in excess of £10 survives the whelping event covered by the Insurance and the whole of the litter is still-born, or dies within seven days of birth, the Association will pay veterinary surgeon's fees not exceeding £3 3s. incurred in the whelping, or alternatively, the stud fee not exceeding £3 3s.
The Insurance under the above Sections is valid following destruction by a veterinary surgeon for humane reasons.

Section 5. Veterinary Surgeon's Fees.
In respect of any accident to the insured animal, the Association pays an amount up to £1 for veterinary fees in respect of each such occurrence.

Section 6. Recovery of Lost or Stolen Dogs.
Where an insured animal is lost or stolen the Association pays a sum not exceeding 15s. in respect of the incurred cost of advertising or of other efforts to recover it. Free special medallion bearing identification number is supplied for attaching to the dog's collar. Printed "Reward" Notices supplied free upon request. If recovered the Association will also pay the sum of 5s. to the Poor Out-Patients' Department of the Royal Veterinary College as a thank-offering on behalf of the owner.

Section 7. Loss of Entry Fees.
When a dog registered at the Kennel Club insured for a sum in excess of £10 is unable through sickness, disease, accident or any other happening for which it is covered by the Policy in force to attend a show the Association will pay an amount not exceeding £5 (Five Pounds) in any one year in respect of incurred and forfeited Entry Fees for the dog or dogs for recognised shows where it would have been shown.

Section 8. Liability for Personal Injuries and Property Damage and Legal Costs.
Including damage caused to sheep, cows, other animals and birds. Injury or damage caused by dogs is often a source of claims and litigation. This cover protects the Insured in respect of liability for such claims and, in addition, pays law costs awarded to a claimant or incurred in the defence of a claim up to the sum of £1,000 in all in respect of any claim or number of claims in connection with or arising out of any one accident or event.

Other Advantages

The Third Party Benefits are reinsured by one of the largest British Accident Insurance Offices.
The Insurance is valid throughout the United Kingdom, Northern Ireland, Isle of Man, Channel Isles and Irish Free State.
Annual Policies in force can (subject to approval) be transferred to new owner on sale or transfer of Insured animal, or another animal of the same class substituted.

In the light of the foregoing information a veterinary surgeon is giving sound advice when recommending a client to insure his dog with a Canine Policy, whether it is of great or small intrinsic value.

Genatosan Ltd., Loughborough. This well-known firm exhibited vaccines, sera and diagnostics produced in the Pasteur Institute (Paris), the Toulouse Institute of Serum Therapy, and the Laigle Bacteriological Laboratory. Some of these products have stood the test of time (*e.g.*, Pasteur's original Anthrax Vaccine); others are more recent, but improvements in composition and method of manufacture are made from time to time as a result of field and laboratory tests and suggestions made by veterinarians.

The principal products exhibited were:—

Nator B.—Composed of sterilised bacteria and is detoxicated; in consequence, it is used either before or during gestation, without risk of infection.

Tuberculin.—Prepared in the Pasteur Institute, Paris. Three types are issued—Subcutaneous, Intradermal, and Avian. The new Intradermal Tuberculin is suitable for both the ophthalmic and intradermal tests.

Anthrax Vaccine and Serum.—The original Pasteur products, which are universally used with success.

Mulsor and Diamil.—For preventive vaccination and curative treatment of bovine mastitis. Mulsor is extensively used with general satisfaction.

Tregor.—For preventive and curative treatment of joint-ill, etc., in foals and calves.

Erysipelas Vaccines and Sera.—The products of the Pasteur and Toulouse Institutes.

Tetanus Sera.—Anti-Tetanic Sera for prophylaxis (3,000 International units) and curative treatment (10,000 International units); also the special Anatoxin prepared according to the method of Ramon and Descombey. This Anatoxin confers an active immunity which lasts at least two years. It is said to be the method *par excellence* for systematic protection against tetanus in districts where the disease is endemic.

Blackleg Vaccines and Sera.—Prepared in the Toulouse Institute according to the method of Leclainche and Vallée. For all ordinary purposes *Total Aggressin* is strongly recommended; this product was the subject of good report at the eleventh International Veterinary Congress, and it has since proved remarkably successful in English practice. In cases where the cattle occupy extensive tracts of country, or communication is difficult, *Living Spore Vaccine* (*Liquid Form*) is indicated.

Cytor.—A polyvalent vaccine for prophylaxis and treatment in surgical and cutaneous infections; especially useful in cases of interdigital cysts in dogs.

Alvor.—Although primarily intended for the treatment of broncho-pneumonia in lambs and calves, this product has also proved valuable for cases of pulpy kidney in sheep. (See *The Veterinary Record*, March 26th, 1932.)

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In addition to bacteriological products the well-known Genatosan general preparations were also exhibited and attracted considerable notice. Although these products are principally employed in human practice they are also used in veterinary work with success.

The following preparations merited special mention:—

Sanatogen.—Described as the "True Tonic Food," this preparation is a chemical combination of specially prepared casein and sodium glycero-phosphate. It exhibits albumin and phosphorus in forms which are readily assimilated by the animal organism and proves especially valuable in cases of nervous disturbances and malnutrition.

Genasprin.—Pure acetyl-salicylic acid, in 5 grain tablets. Owing to a special process of tableting, this preparation contains no trace of free acetic or salicylic acids or other toxic impurities which frequently occur under ordinary methods of manufacture. On account of its purity Genasprin can be prescribed much more freely than other preparations of acetyl-salicylic acid, without any risk of unpleasant sequelæ. It is particularly indicated in those hypersensitive cases which are frequently encountered in canine practice.

Cystopurin.—A double salt of hexamethylene-tetramine and sodium acetate. Cystopurin acts as an efficient and non-irritating urinary antiseptic and diuretic. It exercises a marked sedative effect on the urinary tract, which quickly results in normal micturition with a rapid lessening of the bacteriuria. Cystopurin is indicated in all cases where the action of hexamine is required, without its disadvantages. It is used successfully in all diseases of the genito-urinary tract.

The International Serum Co., Ltd., Norwich. This company's stand featured a comprehensive range of veterinary biologicals. Especial interest was shown in abortus chinosol vaccine, a new type of vaccine for the prevention and treatment of bovine contagious abortion which has been used with considerable success on the continent and is being increasingly employed in this country. "Suisan" is a polyvalent sero-vaccine for the treatment of the diseases of young pigs. For the treatment of canine diseases, canine distemper serum R.S.G., homologous distemper serum (obtained from dogs which have been hyperimmunised against the virus and the secondary organisms of distemper), and "Ergotropin" were shown. Homologous coli serum for dogs has also recently been introduced for the treatment of the bowel form of distemper. "Perlacar" was again on exhibit, and many practitioners have reported good results from the use of this preparation for skin diseases of dogs. In addition to their well-known gland preparation, "Hormal Fem. *c.* Yohimbin," for sterility, chinosol anti-sterility vaccine and "Citosan" vaginal leaves were again shown.

Messrs. Parke, Davis & Co., 50, Beak Street, W.1. Upon this stand was displayed a representative selection of the firm's veterinary products, which included a full range of bacterins, sera, and organo-therapeutic preparations.

In addition to the purely veterinary products there was a number of their specialities which are applicable to human and veterinary use, particularly in small-animal practice, and amongst these a new product, Takazyma, was prominently displayed. This is an alkaline digestant powder which has, since its introduction, been extensively used in the treatment of gastro-intestinal conditions in dogs and cats.

In addition to the above, a selection of Parke, Davis & Co.'s well-known toilet products were on view.

"Sandoz Products," 134, Wigmore Street, London, W.1. This firm, whose preparations now occupy a definite place in the field of veterinary therapeutics, were again prominent with an interesting exhibit.

Calcium-Sandoz (calcium gluconate). As "Sandoz Products" are pioneers in the realm of calcium therapy, this agent was again of great interest and was displayed in all its well-known forms. The new 20 per cent. solution, which is so eminently suitable for the treatment of milk fever, was shown in the rubber-capped ampoule-flasks containing 300 c.c. which constitute a single curative dose.

Ampoules of smaller content were shown suitable for the treatment of parturient hypocalcæmia of ewes, and 5 and 10 c.c. ampoules for the treatment of disorders in dogs and cats.

Veterinary Calcium-Sandoz, designed for oral use and not suitable for the preparation of solutions for parenteral employment, has proved to be readily assimilable and supplies the necessary calcium element for the treatment of calcium deficiency disorders.

Calcibronat was displayed in two forms for oral administration and may be regarded as a double calcium gluconate and calcium bromide preparation. It presents a sedative which acts on both the autonomic and central nervous systems and is employed in the treatment of spasmophilia and urticarial conditions.

Lobeline Sandoz, displayed in the form of ampoules, is now an accepted respiratory stimulant against paralysis of respiration during anæsthesia.

Panthesine and Panthesine Balm are of increasing veterinary interest since Panthesine is the local anæsthetic of extremely low toxicity, while the Balm presents the anæsthetic in an emollient base readily absorbed by the skin and with good analgesic properties. The latter also allays inflammatory skin conditions.

Piroblue was offered for the treatment of bovine piroplasmosis and equine nuttaliosis and is an association of a new trypan blue with cholic acid possessing parasiticidal properties. The inclusion of cholic acid enhances the therapeutic effect, diminishes the toxicity and prolongs the action, thus enabling low dosages to be employed.

In the treatment of tropical forms of these disorders intrajugular injection has resulted in the disappearance of the parasite from the blood within 24 hours with resulting amazingly rapid improvement.

Belladenal, although of minor importance from the veterinary standpoint, constitutes a useful association of phenobarbital with bellafoline, the total natural alkaloids of belladonna leaves. The product is a powerful antispasmodic and anticonvulsive. Bellafoline (atropine free) exerts its well-known inhibitory action on the parasympathetic nervous system reinforced by the sedative action of phenobarbital on the central nervous system. The product offers a possibility in the treatment of hysteria in dogs and small animals.

Femergin, another well-established Sandoz product, was shown. This active principle of ergot—(ergotamine)—by injection produces a strong and lasting contraction of the uterus and is ideal for *post-partum* use.

A convincing selection of veterinary and clinical reprints was displayed, and the composition of all the products was fully disclosed. The policy of the firm continues to be characterised by originality of purpose, and, by careful research work, every endeavour is made to produce products of definite therapeutic value.

Victor X-Ray Corporation, Ltd., 15-19, Cavendish Place, W.1. A portable X-ray diagnostic machine, ideally designed for the veterinary surgeon, was shown for the first time to the profession on the stand of Victor X-Ray Corporation, Ltd., of London—the Victor Model "F" Unit.

Lively interest was aroused by the many unique features incorporated in the equipment, but the demonstration of three outstanding characteristics appealed very strongly to visitors—its safety, its silence and its adequacy for all routine diagnostic investigations, both radiographic and fluoroscopic.

A unique, failure-proof system of shock-proofing is employed, the X-ray tube and entire high-tension system of the machine being totally immersed in oil and thus all electrical hazards to patient or operator are completely eliminated. The unit, moreover, operates from any convenient electric outlet, weighs in all merely 40-lb., and since its control is so essentially simple that no previous experience of radiographic technique is required the machine is claimed to be the most convenient and reliable yet made available to the profession.

Considerable interest was also expressed in the exhibit of veterinary X-ray pictures taken with the model "F," particularly in those indicative of the practical technique applied as a means of determining the existence or otherwise of navicular disease, and in a series illustrating the stomach and gastro-intestinal tract of a spaniel. A representative collection of Victor accessories and supplies as used in veterinary radiography was also on display, together with another item of apparatus interesting to the veterinary surgeon, the Victor electro-surgical unit.

Willows, Francis, Butler & Thompson, Shacklewell Lane, E.8. This firm is one which for age and popularity may justly be considered the "doyen" of those supplying the veterinary profession. We may reasonably describe "Willows" as old friends and supporters of the exhibition side of the many Congresses in which they have been in evidence. Their stand has always been attractive and informative and this year was no exception to the rule; in fact, it was better than ever, and "Willows' Corner" at Belfast was a happy hunting ground for their friends who could quietly examine and criticise, to their hearts' content, the amazing assortment of surgical instruments, biological products (of British make) and therapeutic preparations. Amongst the instruments we noticed a pocket embryotome which appeared to excite great interest and some British-made hypodermic syringes of the highest quality and finish; these should supply a long-felt want.

"Willows" are sole agents for the Veterinary Research Laboratories, London, whose aim is to supply British-made biological products of the greatest possible reliability at a price which will compare favourably with any foreign product. To mention a few out of the vast variety exhibited of vaccines we would refer to those for mastitis, navel-ill, poll-evil, anti-abortion and sterility, but there appears to be provision made for every possible requirement and Willows are to be congratulated in "doing their bit" from a national as well as a sound biological point of view.

On the therapeutical side "Willows," as usual, had novelties, and we would refer specially to "Calosyl," a calcium and arsenic preparation, used as an alterative, restorative and tonic for horses, cattle and dogs and given by subcutaneous injection. It is conveniently put up in ampoules of two sizes for large and small animals respectively.

"Folliculine" is another new preparation of "Willows" and has won a high reputation for the treatment of parasitic and acute skin diseases in dogs, which are also catered for by a "hair restorer" and a "tonic and alterative syrup."

"Willows" Chlorocain was in evidence, and we have every reason to know that as a local anæsthetic it still holds the premier position, while for general anæsthesia "Willows" anæsthetic chloroform has no superior.

We might continue at great length commenting on the versatility of "Willows," but space forbids; room must be found, however, for an assurance of our appreciation of their efforts to contribute to the attractions of another Congress.

Biographical Article

JOHN ROBERT BARKER,

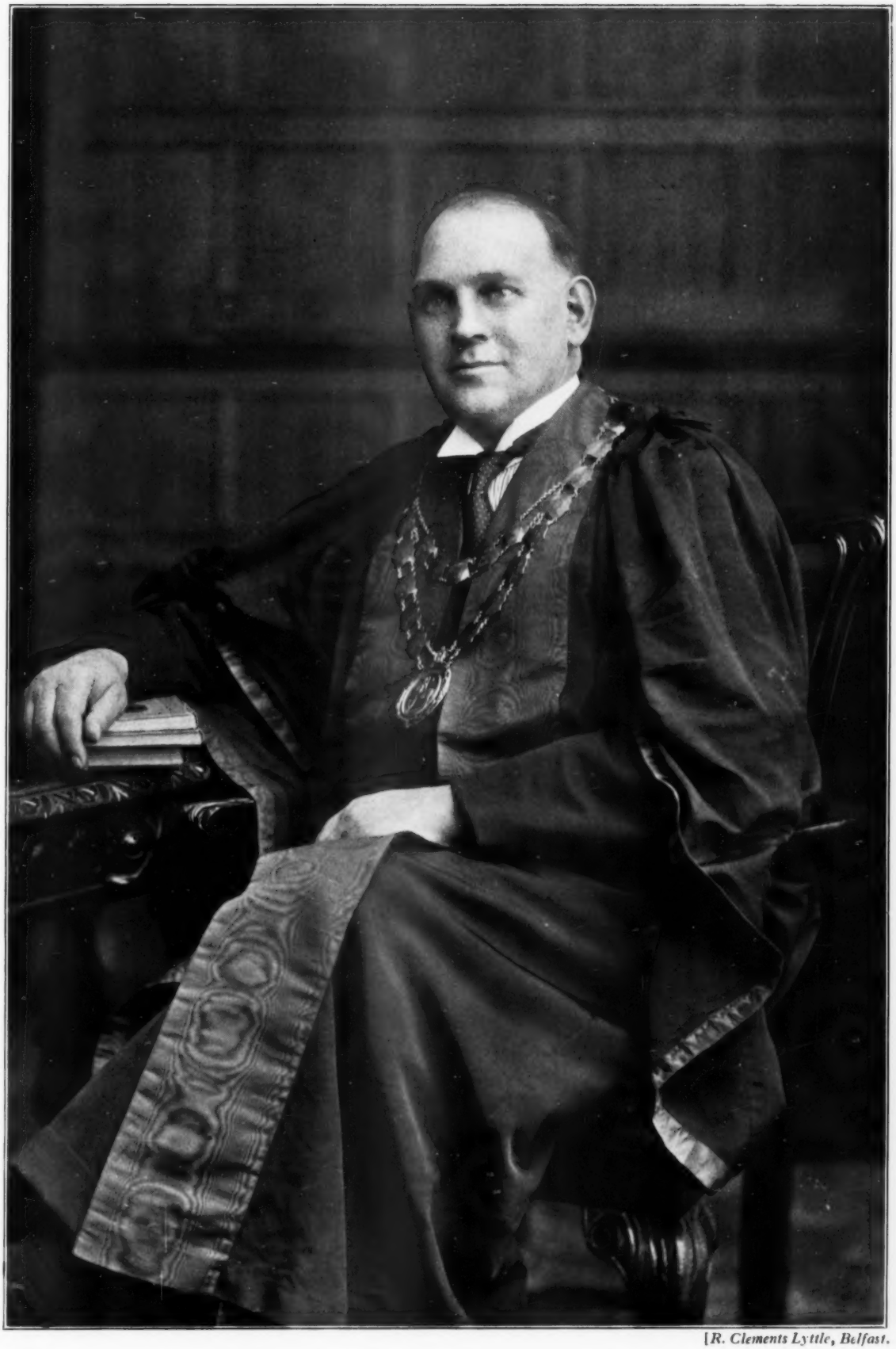
M.R.C.V.S., D.V.H.

President, N.V.M.A., 1935-36

The choice of John Robert Barker as President of the Association for 1935-36 will be a popular one with all sections of the profession, amongst whom he is held in high esteem for his integrity and sterling worth as a general practitioner. Mr. Barker is an idealist who always puts the advancement of his profession before that of his own person, and it is only just that the profession should do honour to one who has devoted his life to the upholding of the highest traditions, both ethical and practical, of the R.C.V.S. and the N.V.M.A.

Born in 1889 at Burnley, Lancashire, Mr. Barker is the son of Mr. J. Barker, M.R.C.V.S., of Nelson, Lancashire. He was educated at the Carr Road Wesleyan School and from there he received a scholarship to the Nelson Technical School. He matriculated in 1906, and in the same year entered the Veterinary School of the University of Liverpool, where he had a distinguished career, getting honours in several years. Whilst there, he also gained his soccer colours in 1908, and was one of the University team in the final for the Liverpool Amateur Cup in 1910. During the whole time he was at the University he was a member of the Guild of Undergraduates. He qualified in 1910, and took his Diploma in Veterinary Hygiene in the following year.

In 1915 Mr. Barker was transport officer on the s.s. Volumnia, which brought 6,000 mules from New Orleans to Avonmouth. From 1916 to 1919 he served in France in the 24th Division. After leaving the Army, he went to Hereford, where he has built up an extensive practice, paying particular attention to the side of preventative medicine. His experience and



[*R. Clements Lyttle, Belfast.*

CAPTAIN J. R. BARKER, M.R.C.V.S., D.V.H.,
President, National Veterinary Medical Association of Great Britain and Ireland,
1935-36

advice are always at the disposal of his colleagues.

During his professional career Mr. Barker has taken an active interest in the affairs of the Association. For several years he has been a most useful member of the Council of the N.V.M.A.; he has always taken the moderate view and displayed conspicuous ability as Chairman of the special Sub-Committee appointed to investigate the work of the Veterinary Advisory Officers.

In 1924, he read a paper at the York Congress, and has been a frequent contributor to the columns of *The Veterinary Record*. In 1933 he was elected President of the Mid-West and South Wales Division, he was re-elected in 1934, and attended the International Veterinary Congress at New York. This year he has been elected President of the Midland Counties Veterinary Medical Association, and is also an active member of the Society of Veterinary Practitioners.

Always keenly interested in social politics and economics, Mr. Barker was elected a member of the City Council of Hereford in 1928 and played an important part in the deliberations of that body until 1934. For four years he was Chairman of the Rating and Valuation Committee and for six years had a seat on the Diseases of Animals Committee of the Herefordshire County Council. More recently he was a member of the Committee of the Association of Municipal Corporations set up to deal with marketing schemes.

We are confident that during his year of office as President of the National Veterinary Medical Association Mr. Barker will preside over the Council with tact and impartiality, that all sections of the profession will receive a "square deal," and we believe that under his guidance the Association will advance with closed ranks in a spirit of harmony, co-operation and mutual understanding.

The sincerest good wishes of all the members are with him, and we can assure him of their full support.

INCREASED INCIDENCE OF RABIES IN SOUTH AFRICA

Nature (*136*, 3,428) draws attention to the reference in the *Onderstepoort Journal of Veterinary Science and Animal Industry* for October, 1934 (3, No. 2, p. 335), to the increase in South Africa in the incidence of rabies in 1933 over 1932. The disease occurs, and appears to be spreading, among the small wild carnivora (*Viverridæ*). The disease was definitely proved in twenty animals, and in addition nine calves and three cows almost certainly died from it. There were six cases in man, transmitted once by a dog, twice by the domestic cat, once by a wild cat, and twice by the yellow mungoose (*Cynictis*).

CLOSING MEETING

(ADJOURNED ANNUAL GENERAL MEETING)

Captain J. R. Barker's Induction

PRESENTATION AND VOTES OF THANKS

There was a large attendance of delegates and their ladies at the closing meeting of Congress (adjourned Annual General Meeting), which was held in the Great Hall of Queen's University, Belfast, on the afternoon of Friday, August 2nd.

At the commencement of the proceedings the President (Professor J. F. Craig), who was in the chair, said: My first duty—indeed, it is more than a duty, it is a pleasure—at this adjourned Annual General Meeting is to present, on behalf of the members of the Congress, a token of esteem and evidence of their appreciation of what has been done for them by the Local Secretary. (Loud applause.)

I need only mention that he has been the most efficient secretary that I have ever come across. (Hear, hear.) At meetings which we had of the local Organising Committee we had hardly to do anything at all, Mr. Magowan had anticipated us, and those of you who came to the Congress wanting anything could find no cause for complaint. If the Local Secretary has no complaints measured against him it indicates the efficiency with which he has carried out his work. He has been a man of capacity and untiring energy throughout the year and especially during the course of the Congress; everyone has been very happy and everything has gone smoothly and on very well-oiled wheels. (Hear, hear.)

Proceeding, the President said: I wish to associate this token with the name of Mrs. Magowan. (Applause.) I know that the strain that was placed upon Mr. Magowan must have been reflected upon Mrs. Magowan during quite a number of months and that the efficiency which was shown by our Secretary would not have been so great had it not been for the unremitting care bestowed upon him and his work by Mrs. Magowan. (Hear, hear.)

I cannot ask you, Mr. Magowan, to come forward and accept this gift [a wireless set] at my hands, because of its size, but I hope that when you take it home afterwards you will take back this instrument as a gift of appreciation by the Congress held in Belfast during the present year. (Loud applause.)

Mr. J. I. Magowan (Local Secretary), returning thanks for the gift, said: I hardly know whether I am the right person who should have come forward to receive this gift, for I can scarcely recognise myself as being the subject of the nice things that have been said about me.

However, I would like to thank you very much. There has undoubtedly been a great deal of work in connection with the Congress, but that work to me has been a pleasure. I have been a member of the Association since I became a member of the profession—(hear, hear)—and this is the first opportunity I have had of doing anything in a small way for the Association. Although it has meant hard work, it has been a genuine pleasure, and I have to thank you, not only on my own behalf, but on behalf of Mrs. Magowan—I think she comes number one on the list of helpers. (Applause.) She has looked after the book-keeping and all that sort of thing, and I only hope it will be found correct. (Laughter.) I would also like to thank the Chairman (Mr. McAllan) and the members of the Provisional Committee, and particularly the Executive Committee: I do not think any secretary has ever been shown more faith and trust, and sometimes it was hope—faith, hope and charity. (Laughter.) The past Secretary of this Association's Congress, Mr. Ritchie, has helped me to avoid many pit-falls, while during the Congress Mr. Steele Bodger has taken on many a job at my suggestion and helped me through the week by readily filling any little gap that was unprovided for. (Applause.) I know, too, how the members have trusted me as a whole. To give one specific instance, a member from Aberdeen asked me, in the hotel, to hold his cigarette, and though it was a free one and small, I think that showed how he trusted me. (Loud laughter.) I thank you all very much. (Applause.)

. . . . .

N.V.M.A. Pension and Family Provision Scheme

The President now rose to say that he would like to refer to the Pension and Family Provision Scheme of the National Veterinary Medical Association. The scheme had been drawn up in connection with the Legal and General Assurance Society, Ltd., which had a large body of practitioners amongst its clientèle, and apparently the scheme had been utilised to a very considerable extent: the same terms could not be acquired by individuals, and at that meeting it was suggested that he should draw the attention of the members to the scheme. Particulars of it had been issued, but just like most particulars they were often set aside until a more convenient moment arose. He believed that the scheme was a very commendable one as a wise and prudent investment, and perhaps those of them who had been thinking of making provision for the future might give a little more attention to it.

. . . . .

Induction of President

Continuing, the President said: Now this is the last scene and the last act of my Presidency, and I can assure you that it has been a very great pleasure to me to have presided over your activities for one year, but my year of office has now drawn to a close. I have much pleasure in inducting the new President to the Chair and in investing him with the insignia of his office. (Loud applause.)

I am sure you have chosen as your new President a man of whom you can be proud, knowing that he is acting in your interests. He has been an active member of this Association for many years. He is a man of capacity and energy and there is no doubt that the honour of the Presidency will be more than maintained during his presence in the Chair. (Applause.) I have now much pleasure in transferring the insignia of the Presidency to Captain Barker.

(The retiring President installed Captain J. R. Barker, Hereford, the President-Elect, into office by placing upon him the robe and chain of President.)

I congratulate you upon your unanimous selection to this high office. It is the greatest honour the Association can confer upon you. I can assure you, just as I have experienced, that you will be assisted by an enthusiastic band of workers during the whole of your presidential year. I wish you every success and happiness in your new office. (Applause.)

(Captain J. R. Barker assumed office as President.)

The President (Captain J. R. Barker) (Hereford): I am doubly conscious, of course, of the responsibility that comes with this office. I am also conscious of some of my shortcomings for the post. The way you have received it gives me courage to go forward. Little did I think when I was coming on the boat from Liverpool that my first visit to Northern Ireland would result in this. Some twelve or 14 years ago I received a Christmas gift from a very great friend of mine who was past-President of this Association—Mr. Henry Sumner, of Liverpool—and underneath he wrote: "Fall in and follow me." That is what my service to the "National" has brought forth. I am very pleased to know that Mr. Henry Sumner was my monitor and I think he will be quite pleased to see me here to-day. (Applause.)

I have always been willing and glad to give my services to the "National." I can think of no greater body in the veterinary profession and no body which is charged with so many possibilities of good for every member and every section of the profession, and during my year of office it will be my endeavour to secure the co-operation of all sections of the profession, so that we can march forward on all fronts at one and the same time. (Hear, hear.)

Professor Craig has mentioned the support

he has had. I am sure it will be forthcoming to myself, and when we reach Scarborough next year I hope those people who so enthusiastically proposed Scarborough will turn up and enjoy themselves as well as they have done in this city of Belfast. Gentlemen, I thank you for electing me President of this great Association. (Hear, hear, and applause.)

The Retiring President Thanked

My first duty is a very pleasant one (proceeded the President), that is to propose a hearty vote of thanks to Professor Craig, the retiring President. (Applause.) In proceedings in Council he has been very tactful and often anticipating danger spots has been able to cut out friction. As a leader of deputations to various bodies he has always looked after the interests of the whole of the profession. Then this work in Belfast—at the opening meeting, and then again in the inspiring address he gave to-day; and not least his hospitality on Tuesday evening in entertaining us as his guests: I am sure that during last year Professor Craig has not spared himself on our behalf—(hear, hear) —and it would be only meet we should accord to him a very hearty vote of thanks. At the same time I think we might couple with it the name of Mrs. Craig. (Applause.) She must have been of very great assistance to him throughout the year and, of course, she has graced so charmingly all the proceedings of this week. Ladies and gentlemen, I ask you to accord to Professor Craig a very hearty vote of thanks. (Applause.)

Professor Craig (Dublin): I think that all I need say is "thank you." One likes to think that what one does, even if it be so little, is appreciated. I have been trying to do what I could, but I know that at times it was impossible for me, on account of time and distance, to give the attention that one would wish to all the activities of the Association, and there is nothing that I appreciate so highly—and I cannot speak too highly of it—as the weight that is taken off the work of the President by a really noble and enthusiastic band of workers in the Council and Committees who are always willing to lighten the task of the President and to take it upon themselves. I think it is a very happy association that is endowed with such an enthusiastic band. Thank you. (Applause.)

MEAT INSPECTION RESOLUTION

The President: Seeing that there are no "Matters that have arisen during the Congress" to be brought forward, the next item on the agenda is "Any Resolutions."

The Secretary read the following resolution:—

Resolution from Public Health Section of Congress.

Proposed by Lieut.-Colonel T. Dunlop Young, and seconded by Captain J. Pollard:—

> "That a resolution that all animals intended for human food be as far as possible examined *ante-mortem* and *post-mortem* and that all meat should be stamped, be sent to the appropriate Government Departments of England, Scotland and Ireland and that these Departments be also urged to make more intensive use of the services of County Veterinary Staffs in connection with meat inspection in county areas, as recommended by the English Departmental Committee on Meat Inspection."

Professor Craig (Dublin): You wish this to be referred to Council for action?

Lieut.-Colonel T. D. Young (London): To be referred to the Council for consideration.

The President: It is proposed that this be referred to Council for consideration.

The proposition was carried unanimously.

DR. GRIFFITH EVANS: THE PROFESSION'S CENTENARIAN

Professor J. F. Craig (Dublin): The doyen of the profession, Dr. Griffith Evans, will attain his centenary—a wonderful age to reach —on August 7th, and I would suggest that a message of congratulation be sent on that date from the Association to him. I do not think it is necessary to amplify that. (Applause.)

VOTES OF THANKS

The President called upon Mr. Nairn to propose the first vote of thanks.

Mr. W. Nairn (Blairgowrie): A great deal of our pleasure has been due to the hospitality of different public bodies. I have great pleasure in moving that the best thanks of the Association be conveyed to those bodies, with a suitable letter—the Government of Northern Ireland, for the Banquet on Wednesday—(applause)—the Belfast City Council, for according the Association a civic welcome; the North of Ireland Veterinary Medical Association, for the informal "At Home" last Sunday evening.

A Member: With respect, Sir, there is a mistake in Mr. Nairn's resolution. The Civic Reception was not given by the Belfast City Council; it was given by the Lord Mayor, and any thanks which are to be sent should be sent to the Lord Mayor himself.

Mr. Nairn: I was dealing with the information I received. You might wish to correct also the thanks to the Government of Northern Ireland. I would suggest that the thanks should be transmitted to Sir Basil Brooke, to be forwarded. We enjoyed the presence of Sir Basil so much and he showed himself so much interested in our profession that I am sure we

should also like to acknowledge his kindness on that occasion. (Applause.)

The President: I call upon Professor Craig to move the next one.

Professor Craig: The resolution that I am called upon to propose is one which you will all appreciate who have attended these meetings. It includes the facilities that have been provided for us in this wonderful University here. It forms such a fine setting to the Congress, and the buildings reserved for our use were so commodious, and of such a nature that they suited the Congress and its meetings exactly. The resolution is that the best thanks of the members of the Association be accorded to the Vice-Chancellor and the Senate of Queen's University for providing the accommodation for the various meetings of the Congress, also for the exhibition of drugs, etc. It does not require any comments of mine to commend this resolution to the meeting. (Applause.)

Captain J. R. Rider (Darlington): The resolution which has been allotted to me is a somewhat voluminous one, and I trust you will bear with me while I read out the various people concerned. It is that the best thanks of this Congress be accorded to the readers of papers, openers of discussions, operators, and demonstrators; also to Captain McLean, for arranging for members to visit the City Abattoir, and to Mr. Ewing Johnston, for providing for the operations and demonstrations; to the Provisional Committee for organising the Congress, to Mr. McAllan, to the Local Secretary—Mr. Magowan—and to the Ladies' Committee, for their hearty co-operation in connection with the social functions. Now, ladies and gentlemen, you will agree with me, had it not been for all these "biddable" people, there could have been no Congress whatever. We are extremely grateful for everything that they have done. I note my good friend, Mr. McAllan, has acted as Chairman this year. We have a very vivid recollection of his activities some years ago as Local Secretary. We have heard much of Mr. Magowan's abilities. Regarding the ladies, they have graced every function with their presence, and what more could men wish? (Applause.)

The President: I call upon Captain Simpson to move the next resolution.

Captain R. Simpson (Carlisle): The resolution which I have to propose is a very brief one. It is to ask you to accord to certain bodies in Belfast and further afield who have very kindly placed their facilities, etc., at our disposal, our best thanks. I refer to Knock Golf Club, and the Royal Portrush Golf Club. Unfortunately we have been kept so busily engaged that we have not been able fully to avail ourselves of these facilities. Also Windsor Tennis Club for the use of their courts. I think you will accord these bodies a very hearty vote of thanks for having put these facilities at our disposal this week. (Applause.)

Mr. H. W. Steele Bodger (Tamworth): The vote of thanks that I have to propose requires tact, and I have no doubt that is why I have been entrusted with it. It is my duty and my pleasure to propose a hearty vote of thanks to the Press for the excellent reports which they have put in the papers concerning the activities of the Association. (Hear, hear.) They have also put in excellent photographs—which, of course, have graced their columns—of ladies sitting by lily ponds and group photographs of ladies accompanied sometimes by their husbands and sometimes not. (Laughter.) But I might suggest to the Press that they also require a little tact in that, because they have put in one photograph of a number of ladies and gentlemen who perhaps when they came back from their various meetings had described their activities as other than the picture would have indicated. (Laughter.) I should like to state that I do not know of any Congress where we have had a better local Press than we have had here. (Applause.) If I might, Sir, I should like to ask one thing of the Press; that is, if they could assist the profession in doing away as far as possible with the abbreviation of our title into the word "Vet." (Hear, hear.) Years ago we were known as farriers. We were then promoted and we were called horse doctors. Then we were again promoted and we were called "Vets." Now in certain parts of the country we are almost generally known as either veterinarians or veterinary surgeons, and I would suggest, Sir, that this is an opportunity and an occasion on which the Press can afford us valuable assistance if they would help the Association and the profession as a whole to do away with the term which many of us dislike in the justifiable hope that as we have improved so we deserve our true title. I ask you, Mr. Chairman, ladies and gentlemen, to accord a very hearty vote of thanks to the Press.

Mr. McMullan (of the *Belfast Telegraph*): As the only local Pressman present I would like to thank you very much for your very kind vote of thanks. I think I attended most of your meetings. I must say as a Pressman they were easy to report and I am glad to know you think I did justice to them. I think I did fall into the error of calling you "Vets.," but I will pass word around the office and I do not think it will occur again. (Applause.)

Declaration of the Close of Congress

The President: The next and only remaining item is to declare this Congress closed, and this I accordingly do.

Mr. W. Nairn: We should express our grateful thanks to our new President, Mr. Barker, for his dignity in the chair this afternoon. (Applause.)

POST-CONGRESS MEETING OF COUNCIL

The first meeting of the Council elected to officiate for 1935-36 was held in the Queen's University, Belfast, on the afternoon of Friday, August 2nd, immediately prior to the closing meeting of Congress.

The newly-elected President, Captain J. R. Barker, occupied the chair, and there were also present: Messrs. H. W. Steele Bodger, David Brown and H. E. Bywater, Professor J. F. Craig, Lieut.-Colonel J. A. Dixon, Captain J. Fox, Captain O. V. Gunning, Messrs. George Howie, H. G. Lamont and J. McAllan, Captain S. J. Motton, Mr. W. Nairn, Captain J. R. Rider, Messrs. G. A. Sangster and P. L. Shanks, Captain R. Simpson, Messrs. Alex. Thomson and W. Tweed, Professor G. H. Wooldridge, Captain W. G. Wragg and Lieut.-Colonel T. D. Young.

The Secretary announced the receipt of apologies for absence from the following: Professor G. F. Boddie, Professor J. B. Buxton, Mr. Arthur Gofton, Major Brennan DeVine, Professor Sir Frederick Hobday, Mr. J. W. McIntosh, Captain W. R. McKinna, Captain G. Dunlop Martin, Mr. J. W. Hall Masheter, Professor Wm. C. Miller, Major-General Sir John Moore, Major R. H. H. Over, Captain A. W. Noel Pillers, Captain E. Brayley Reynolds, Mr. W. D. Rees, Mr. Horace L. Roberts, Major F. J. Taylor, Major J. H. Taylor, Lieut.-Colonel P. J. Simpson, Mr. A. R. Smythe, Dr. A. W. Whitehouse, Mr. T. Wilkinson, Mr. Wm. Woods and Dr. W. R. Wooldridge.

Continuing, the Secretary stated that the meeting had been called for the purpose of electing Standing Committees of the Association for the ensuing year, and to deal with any matters which had arisen during the Congress and which required immediate attention.

The President said that, for the purpose of electing the Standing Committees, it had been the custom, he understood, to appoint a Selection Committee to report to the next meeting of Council.

In reply to Captain Simpson, the Secretary said that the Nominations Committee appointed last year was constituted as follows:—

The President, the Honorary Officers, the Chairmen of Standing Committees and

(1) *As representing General Practitioners*: Messrs. J. R. Barker, H. W. Steele Bodger, E. P. Edwards.

(2) *As representing Part-time Veterinary Officers*: Messrs. H. W. Dawes, R. H. H. Over, S. J. Motton, J. Holroyd.

(3) *As representing Whole-time Officers*: Messrs. J. A. Dixon, D. S. Rabagliati, R. Simpson, W. Tweed.

Dr. W. R. Wooldridge was also appointed a member of the Committee.

The President said that when the Nominations Committee came to make nominations for the Standing Committees he hoped they would take note of the complaint that was made last year at the small representation of Scotland upon these committees. (Hear, hear.)

Professor Wooldridge suggested that any nominations that members of Council might have to make should be forwarded to that committee for consideration.

The following motion was then put to the meeting and carried: "That the Nominations Committee be reappointed and that the name of Captain Gunning be added to the representatives of general practitioners thereupon; also that members of Council having nominations to make for Standing Committees send them to the General Secretary for consideration by the Nominations Committee."

PROVISION FOR A PRESIDENT-ELECT

There being no matters arising during the Congress, Mr. Nairn rose to say that, with regard to the election of President, he thought they should consider the position as they had observed it in the past and whether they could not improve matters by adopting some other procedure.

He thought it was most unfortunate that a man should only know two days before he was elected to office that he would be required to fill the position. (Hear, hear.) In his (Mr. Nairn's) opinion, in future, the President should be nominated twelve months before the date of election, thereby holding the office of President-elect for one year prior to filling the Presidential Chair. By this means the person concerned would be relieved of a great deal of worry, while the procedure would have the additional advantage of promoting continuity of policy.

The proposition "That the Finance and General Purposes Committee be asked to consider and report upon the suggestion that in future the President be nominated twelve months before the date of election" was carried unanimously, as was the supplementary proposition "That the President-elect hold office as a Vice-President."

Before the meeting concluded, Professor Wooldridge moved "That the Council express its great gratification to the local committee for all they have done to make the Congress the success it has been."

The Council having greeted the motion with loud applause, the President observed that he did not think there was any need to have a

(*Concluded at foot of col.* 1, *page* 1014.)

LADIES' VETERINARY BENEVOLENT GUILD

ANNUAL GENERAL MEETING AT BELFAST

A well-attended meeting of the Guild was held at the Queen's University, Belfast, on the afternoon of Wednesday, July 31st, under the chairmanship of Mrs. A. McLean, President of the Guild.

In opening the proceedings, Mrs. McLean said that this was the fourth Annual General Meeting. It was unnecessary to remind the ladies of the Guild that the only object was to raise money by means of dances, bridge parties, etc., for the purpose of helping deserving cases of destitution in the veterinary profession. They were dependent on the efforts of those who could spare time from their domestic duties and were willing to devote their talents to the organisation of such functions. To those who had helped in the past the thanks of the Guild were due; to future helpers they wished good luck in a good cause.

They were there to receive reports on the work of the past year, and before calling on the Acting Secretary, she desired to express from the Chair their appreciation of the presence of Dr. Bullock, Secretary of the Victoria Veterinary Benevolent Fund. In the unavoidable absence of Mrs. Nickinson, the Hon. Secretary, Mrs. Kelly, who was acting in her stead, read the minutes of the previous Annual Meeting, which were signed as correct.

Representative on the Council of the Victoria Veterinary Benevolent Fund.—A letter was read from the Secretary of the Fund stating that under the Articles of Association the Ladies' Guild were entitled to nominate a member on the Council of the Fund.

On the proposition of Mrs. Wooldridge, seconded by Mrs. Jackson Young, it was unanimously resolved that Mrs. Nickinson be appointed to represent the Ladies' Guild on the Council of the Victoria Veterinary Benevolent Fund.

Secretary's Report

Mrs. Kelly read the Secretary's report as follows:—

This year has been a very successful one, as the following information concerning our financial activities will serve to indicate. There is a balance of £47 16s. 3d. in the bank after our having sent to the Secretary of the Victoria Veterinary Benevolent Fund the sum of £253 11s. made up as follows:—

£150—£86 12s. of this being proceeds of the dance held in Edinburgh on the occasion of last year's Congress.

£24—From Mrs. Craig, Dublin, proceeds of a whist drive.

£44 11s.—From Mrs. McLean, Belfast, proceeds of a dance.

£35—Proceeds of a dance held in London.

£253 11s.

Subscriptions have come in very well, and there is a satisfactory number of new members. The membership of the Guild now stands at 314.

M. S. Nickinson,
Hon. Secretary and Treasurer.

It was resolved that the report be received and adopted.

Election of Officers

President.—On the proposition of Mrs. Nairn, seconded by Mrs. Young, it was unanimously resolved that Mrs. W. G. Wragg be elected President of the Guild for the ensuing year.

Vice-Presidents.—On the proposition of Mrs. McQuaker, seconded by Mrs. Waddell, it was unanimously resolved that the present Vice-Presidents be re-elected, with the addition of Mrs. G. H. Wooldridge.

Hon. Secretary and Treasurer. — Mrs. Wooldridge proposed, Mrs. McCrea seconded, and it was unanimously resolved that Mrs. Nickinson be re-elected Hon. Secretary and Treasurer of the Guild for the ensuing year.

Hon. Auditor.—On the proposition of the President, it was unanimously resolved that Sir John Moore be re-elected Hon. Auditor for the ensuing year, with cordial thanks for his past services.

The President then called on Dr. Bullock to address the meeting, and he took the opportunity of describing the two Benevolent Funds of the profession, namely the National Veterinary Benevolent and Mutual Defence Society, of which the Hon Secretary was Mr. R. C. Locke, and the younger society, the Victoria Veterinary Benevolent Fund.

Dr. Bullock explained the working of the two funds which, he said, were not rivals, but collaborated in the work of relieving cases of distress among widows and orphans of veterinary surgeons. He gave descriptions of some of the more recent cases which had been dealt with, and appealed to the ladies to do all they could to interest their friends in the work of the funds in the endeavour to increase the available income.

The proceedings then terminated with a vote of thanks to Mrs. McLean for the admirable manner in which she had carried out the duties of President.

formal proposition on that point, but that he thought it was a very nice thing on the part of the Council to have spoken and acted in that way.

The meeting then terminated with the according of a vote of thanks to the President for his conduct of the proceedings.

Papers Presented to Congress

In this issue are reproduced two of the papers presented to Congress, together with reports of the discussions upon them which took place at Belfast. These, which were Nos. 1 and 2 of the series, were, respectively, the contribution to the Veterinary Medicine and Surgery Section made by Mr. F. T. Harvey, F.R.C.V.S., of St. Columb, on "Some Aspects of Red-water in Cattle," and that to the Experimental Pathology Section by Mr. H. G. Lamont, M.SC., M.R.C.V.S., of Stormont, on "Coccidiosis in Bovines and Poultry."

In succeeding numbers of *The Veterinary Record* will be reproduced, in the order in which they were considered by the Conference, the following papers and discussion reports: "The Position of the Veterinary Surgeon in the Control of Milk, with special reference to Communicable Diseases" (Public Health Section), by Mr. P. F. Dolan, M.R.C.V.S., D.V.S.M., of Dublin; "The Modern School of Thought on the Practical Effect of Certain Unsoundnesses on the Serviceability of Riding Horses" (Veterinary Medicine and Surgery Section), by Major C. H. S. Townsend, O.B.E., M.C., F.R.C.V.S., School of Equitation, Weedon; "Notes on the Commoner Helminth Parasites of the Respiratory and Alimentary Tracts of the Domestic Ruminants" (Experimental Pathology Section), by Colonel W. A. Wood, of Cambridge; and "The Work of Veterinary Officers, with special reference to the Production and Inspection of Imported Meat Foods" (Public Health Section), by Lieut.-Colonel T. Dunlop Young, O.B.E., M.R.C.V.S., D.V.S.M., of London.

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SOME ASPECTS OF RED-WATER IN CATTLE*

F. T. HARVEY, F.R.C.V.S.
St. Columb, Cornwall

Diseases caused by piroplasms are common enough in different parts of the world and the usual variations occurring in familial diseases are met with amongst them. In Great Britain we are chiefly concerned with the three host tick-borne, seasonal, and regional disease of cattle usually termed red-water, in which the piroplasm *Babesia bovis* or *Piroplasma divergens* invades the red cells of the blood with resulting hæmoglobinuria, which is the classical sign of the disease.

It is perhaps the one disease which laymen can frequently diagnose with accuracy, and herein lies the root cause of many of the complications, accidents and disasters which may befall the animal in the course of the illness, for the belief still holds good amongst the laity that anyone can treat a disease once it is given a label. In some districts and in some seasons, red-water is a lethal disease unless it is dealt with promptly, while in other years it is a mild affair, and recovery will be the rule under quite different forms of treatment, or even with no medical measures whatever; hence the successes, the failures, and the number of reputed certain cures which are legion; indeed, we may regard red-water therapeutically as the Cinderella of diseases. We still encounter the mortality and the failures described by Youatt, a century or more ago, and which perhaps induced the Highland Society of Scotland, in 1830, to offer a gold medal, or ten sovereigns, for the best essay on the causes, prevention and cure of the disease.

SOME MODIFYING FACTORS IN THE INCIDENCE, COURSE, AND SEVERITY OF THE DISEASE

These aspects of red-water are very intriguing. In practically all diseases there is some clinical evidence or obvious reaction of the body to the invading organism, but here infection takes place and may be lifelong and yet the animal may never suffer in the slightest as far as can be seen. The infection resembles syphilis and malaria in its possible lifelong duration, but differs from those diseases in that such infection does not tend to induce structural changes in internal organs, nor does it predispose to any disease other than hæmoglobinuria and the latter usually is limited to one attack. The condition which we term red-water may thus be regarded as a sort of side-line of the infection although a somewhat serious one.

On infected tick-infested farms practically all the cattle may be frequently reinfected and yet few of those reared on them may show symptoms unless some untoward event, or precipitating factor, occurs in relation to a particular animal, or the herd generally, when several animals may have red-water. Chance or accident may thus determine whether the red-water syndrome will or will not follow infection, and in treating the condition the same features may modify or aggravate the attack and upset the prognosis.

Immunity.—This is acquired by a process of premunition (a term applied to that form of resistance to a disease shown by an animal

* Presented to the Veterinary Medicine and Surgery Section, N.V.M.A. Congress, Belfast, July 29th, 1935.

which is already tolerating the presence of a small number of, or a sub-infection by, the organisms concerned) and whether occurring naturally by tick agency or produced artificially by inoculation, is of considerable importance in the prophylaxis of red-water—indeed, the most important factor, since by its action dangerous areas may become reasonably safe for the grazing of cattle. Here infection precedes immunity, there being a low-grade chronic infection associated with a high degree of resistance to superinfection, but bad breaks may occur, and the usual causes of such breaks are œstrum, storms, parturition, over-driving, transit by car or sudden changes generally. Thus after a cold blast, or flood, in spring or autumn, cases may be reported over a wide area as a result of "chill," but acute febrile or debilitating conditions such as emaciation, overcrowding, other parasites, vitamin and mineral deficiency, do not appear to raise the incidence of red-water cases.

TYPES AND FORMS OF RED-WATER

Usually the disease is divided into two forms, but such divisions are of little or no value, since every type of case may be met with in a single outbreak. The existence or otherwise of premunition, however, will afford some indication as to the type we are likely to encounter in the patient or herds affected. One may frequently see two or three animals die at the beginning of an outbreak and then a number of cases following of a milder type. Although rapidly fatal cases may occur under all conditions they are commonest on areas used for agistment purposes, wherein the stock is frequently changed, and both clean cattle and those carrying infected ticks are brought in, whereby low resistance and high virulence go hand in hand. It seems probable that susceptible cattle in good condition are liable to react severely to infection, but the skins of such animals may be more attractive to ticks than those with less supple hides, and thus they may receive a heavier infection, while their metabolism also may be more easily upset than that of a leaner kind; such cattle require great care in their management. In a recent outbreak (Case 9) amongst grade cattle ticks swarmed on them and several, although not having red-water, ran high temperatures, fed badly, and were drowsy and so continued for a week or more. An affected animal, until the urine has cleared and even for some days after, if the attack has been severe, may collapse from apparently slight tissue insults, and it is this aspect which makes careful management so essential and the final outcome so uncertain. No one reading a text-book description of red-water would realise the variety of these "catastrophes of medicine" as the late Wallis Hoare used to term them, which may be encountered in the course of the attack.

Many diseases kill of themselves, but red-water renders the animal easily killable by quite commonplace events, and thus the course of the illness and fate of the patient will depend largely on its management during the first day or two of the attack. It may, however, be convenient to place cases of red-water under three headings:—

(*a*) Malignant Form.—No premunition. In early summer or autumn clean cattle are transferred to an enzoötic area and in two or three weeks red-water occurs; it is here that we meet not infrequently with real tragedy and see the disease in a fulminating form. On June 1st, 1932, 22 clean cattle arrived in a district with a bad reputation, and by the end of the month 17 cases of red-water had occurred, with five deaths, and several of those which recovered were very ill. On another occasion there were four deaths within a few hours, before the owner appeared to be able to adopt any treatment whatever. Many of such rapid fatalities, however, are due to the cases being missed or overlooked for a day or two, and are almost hopeless when discovered; subsequently the owner or caretaker gets keyed up, cases are detected earlier, and so, with proper care and treatment mortality disappears, premunition becomes operative, and the outbreak ceases.

(*b*) Benign Form.—This is the common red-water of practice. The animals may, or may not, be premunised and cases occur singly or in groups, a dozen or more being affected at a time. The mortality should be very low but will vary according to the treatment and general management; it is wise to regard all cases as potentially dangerous until the water is clear and the animal feeding. The urine should be practically clear in 36 hours and convalescence established under three days.

(*c*). Red-Water of Irregular Occurrence.—These are cases met with in mid-winter or at any time of the year, and infection may have long ante-dated the hæmoglobinuria. They usually occur singly and may be found in cows on areas where red-water is practically unknown, the infection having been acquired elsewhere. In some respects they resemble black-water fever in man, where malaria, a large dose of quinine, or a cold bath, following residence in a tropical country, may determine the attack, but no parasites or very few may be found. This type of case is particularly serious in heavy-yielding cows and the patient is often badly damaged by home treatment before professional aid is sought. The disease is recognised by the owner but the animal is ignored, no consideration being given to the stage of its illness or the reactions mani-

fested; the treatable period is then rapidly passed and the patient dies.

Spring and Autumn Red-Water.—Cattle on the whole stand red-water attacks better in spring and early summer, when there is greater power or recovery from tissue insults of various orders and nutrition is on the up-grade, than in autumn, when there is less resistance, especially among cows.

Drenching Accidents.—A product of home doctoring. Commoner in red-water than in any other general disease. Usually the first drenching goes wrong and is responsible for many deaths; the animal may drop almost suddenly or pneumonia supervene. Avoid by administering all fluids by tube; in fact, valuable animals affected with red-water should never be dealt with otherwise.

Vomition.—Closely associated in its causation with the above. I have known ingesta shot out of the mouth with some force immediately after drenching and regurgitation should be watched for, even when using the tube, if the stomachs are loaded. Late vomiting may also occur in red-water and is always serious.

Duration and Course.—Clinical and therapeutical observations indicate that red-water in favourable cases is a two-day, or at most a three-day, disease and it has become of some interest to note that this period coincides with that in which the piroplasms are to be seen circulating in the blood stream. Should the animal fail in its struggle to dispose of broken down and toxic material, however, then a new disease arises in which there are gross changes internally, such as liver necrosis, etc., and the animal often dies.

CLINICAL AND GENERAL TISSUE REACTIONS IN RED-WATER

Sometimes the urine has not been seen and no ready-made diagnosis is at hand. If the case is in the early stages the "pipe stem" or projectile diarrhœa so often present will be almost diagnostic; it precedes the constipation as a rule and the fæces are often bile-stained; the anal sphincter is in a state of increased tonus and if the fæces are firm in consistency they may be voided with difficulty, and cause much straining. The increased anal tonus is of some importance as an index of the progress of the case and its disappearance is a favourable sign, as there is then usually free passage of the fæces. The clues thus obtained will suggest an examination of the urine, but none may be obtainable especially if the case is advanced. The membranes will then be pallid but there will be no obvious icterus; the animal will prefer the ground and the heart beats may occasionally be heard some distance away. Place the ear over and behind the hip joint, or loins, and if you can then count the heart beats you probably have a case of red-water, or a recent hæmorrhage. This sign is also of value as indicating the stage of the disease. It is not usually evident before the third day of the attack and its absence is of good omen. If heard on the second day the case will probably be a grave one, and while it continues the animal must be handled with great care and a guarded prognosis given.

The Nervous System.—Otherwise quiet animals may sometimes charge anyone who appears on the scene and a mistake in diagnosis may be made. I regard brain disturbance as of serious import and, likewise, those coarse tremors of the shoulder or thigh muscles sometimes seen in advanced cases and which are quite distinct from the rigors associated with fever and seen in the early stages of red-water, especially after drenching, or a drink of cold water. Coarse tremors, even if the urine has practically cleared, always presage death.

The Heart and Blood Pressure.—The heart is probably the storm centre in red-water and it may get into difficulties quite early in the attack and thus we get shocks in all stages of the disease. The oxygen-carrying capacity of the blood is lowered and the nutrition of the heart suffers, so that active movement or excitement during the attack may have disastrous consequences. I have seen cases of red-water with a good appearance quickly go to pieces on being turned out to graze with the herd for a few hours. There is a tendency to a fall in blood pressure in red-water, since the factors which favour its production are practically all present—diminished blood volume, impaired heart and muscle, and loss of arterial tone as shown by the soft compressible arteries and sometimes the markedly dicrotic pulse. Why, with an impaired heart dealing with a diminished amount of blood at each beat, the sound should be heard readily at a distance in red-water it is difficult to say, but we know that empty vessels make more noise than full ones and then the body dehydration also may have some influence.

The Lungs.—The lungs are not seriously affected provided nothing finds its way down the trachea. Pneumonia is not an uncommon complication in red-water where there has been home doctoring but it is largely accidental and should be eliminated with a rational treatment and good management. Frequent deep respirations are sometimes seen in red-water but unaccompanied by grunting and physical signs of lung damage. It seems a kind of air hunger and is probably an expression of an impending acidosis, and is best treated with glucose or cane sugar, for carbohydrate reserves tend to run low. I have seen the breathing greatly improved after water and sugar.

The Kidneys and Urine.—The kidneys play a

secondary part in the red-water cycle compared with that of the liver and parts associated with the portal system. Hæmoglobin does not pass through the kidneys until it has reached a certain level in the blood stream and when it does appear in the urine it is an indication that the liver and reticulo-endothelial system are in difficulties and unable to cope with the burden thrown on them. This probably explains why a quickly-acting saline purgative relieving the liver and portal system, frequently clears the urine in a somewhat dramatic manner. There is usually a great rise in the amount of urine passed during the attack; in some cases it is enormous and I have seen such cases collapse quite early. The kidney itself appears to suffer little damage as a rule, since the alkaline urine of herbivora favours the passage of hæmatin, while acid urine tends to precipitate it and block the tubules. In speaking of the urine, hæmoglobin only is spoken of customarily, but bile pigment, urobilin and other products of tissue waste also appear in increased quantities. A sample of urine should be taken frequently and if it is not clearing in 48 hours we should anticipate storms and reconsider the treatment. The appearance of the froth seen on shaking the urine may be some guide to the progress of the case, it should become paler and quickly resolve. Some urines become much darker on exposure to the air and this is probably due to the presence of urobilin absorbed from the bowel, but urobilin may be associated both with the death of blood cells and liver dysfunction. In some cases of red-water the urine continues dark or smoky in appearance for several days and yet the animal does not become very anæmic or seem much amiss otherwise. Here, also, I think it is urobilin which is causing the discoloration. A moderate dose of magnesium sulphate usually clears up the case.

The Reticulo-Endothelial System.—A present review of the tissue changes in red-water must include a reference to the reticulo-endothelial system, composed of cell elements and found especially in the spleen, liver and bone marrow, and less so in lymphoid tissue, blood, and connective tissues generally, and now regarded as a single tissue or organ. As previously stated, in red-water and other protozoal diseases these reticulo-endothelial cells are said to be the actual agents which determine the immunity, but this is only one of the relationships of the system of red-water disease, since toxins, dyes, free hæmoglobin, etc., are taken up by them and removed from the blood and tissues. Trypan-blue, a specific for certain piroplasms, given intravenously, causes immediate general staining of the reticulo-endothelial cells throughout the body, hence the blue colour of certain of the tissues noted in treatment by trypan-blue. Death of red cells is continuously taking place throughout life from normal wear and tear and the discharged hæmoglobin is converted by these cells to bilirubin and hæmosiderin, the former being taken up by the parenchymatous liver cells and passed out by way of the bile and not by the kidneys. In red-water, however, there is a mass destruction of erythrocytes and the reticulo-endothelial cells become unable to deal with the situation, the unconverted hæmoglobin is run off by the kidneys, and then we get our disease of red-water, so that the latter becomes really a breakdown of a normal process. Stockman (1909) noted that red-water following inoculation seldom lasted more than two or three days and that the parasites then disappeared from the blood, and he suggested that drugs confined them to internal organs, but the parasites also disappear under field conditions in a similar manner and it seems that the reticulo-endothelial cells are responsible for holding them up and not drugs, as suggested by Stockman; but, of course, little or nothing was known concerning these cells in those days. It is thus seen that the reticulo-endothelial system is responsible for the immunising process of red-water, that it also breaks up the hæmolysed products of the dying red cells, and, further, that they are the agents in removing piroplasms accumulated in the spleen and liver, where these cells are to be found in abundance. The enlargement of these organs, especially the spleen, as found in *post-mortem* examinations of red-water cases, is perhaps the result of an enormous aggregation of these same cells.

The Liver.—In few general diseases can the liver be of greater importance than in red-water, for although the heart may be a storm centre from the start, in a delayed case the liver becomes a lethal chamber. Red-water has two phases, one comprising the invasion of piroplasms with resulting hæmolysis from which the animal recovers with little structural change other than a passing anæmia, and a second one in which there is damage to the liver which may be very severe, so much so that the hepatic cells injured by toxins, etc., are unable to convey the bile pigment from the reticulo-endothelial cells into the bile capillaries and the bilirubin is thrown back into the blood stream, forming a sort of vicious circle. Then the appetite goes, bowel stasis increases, the urine voided continues dark and thick, anæmia becomes profound, and the vital forces fail. Here we have liver dysfunction and a bad outlook—the so-called "dry murrain" which has been the bane of red-water for a century. The maintenance of liver efficiency and the clearing of the portal system is therefore of great importance in carrying an animal through the

attack, and the failure to deal with this aspect in the early stage is responsible for much of the mortality met with.

Since the above was written I have obtained from a knackery some livers from cases of red-water which appear to have died after several days' illness. Portions were sent to Dr. Minett, Research Institute, Royal Veterinary College, and reported on by Mr. A. B. Orr. "In all these cases the liver shows definite necrosis, and this change appears to have occurred in the central zone of the lobules. In addition, fatty degeneration was present but the most constant change was the necrosis in the central zone above mentioned." With regard to the cause of the necrosis, Dr. Minett alludes to some experiments of Hjärre (Sweden). The latter describes liver necrosis in piroplasmosis as due to thrombosis of the vessels within the lobule by the stroma derived from broken-down red corpuscles. Many toxic conditions, however, may cause necrosis of liver cells and the state is one which has evoked considerable comment in recent years.

Blood Changes in Red-Water.—Although the invading piroplasms begin the destruction of the red corpuscles it is not improbable that some other factor or factors may continue the hæmolysis in the later stages of many of the fatal cases. Observers—including Stockman, Nuttall and Hadman, and A. C. Fraser—are agreed that piroplasms are rarely found in smears after the second day of the attack, but many substances such as liver toxins, or the actual products of the hæmolysis may continue the hæmolysing independently of the piroplasms after "the trigger has been pulled" (Manson) and from a long experience of red-water fatalities in former years I think something of the kind is of frequent occurrence in the disease.

A. C. Fraser has observed that although there was a marked fall in the red corpuscle count, as soon as red-water was noticed, little or no attempt was made by the bone marrow to make good the loss for days and that a week was required for the response to reach its height. The importance of this is obvious as it indicates that in a severe attack although the water may have cleared, the patient's state may be critical for several days. There are, of course, histological reasons for this lag.

Post-Mortem Appearances.—These will vary as to whether death has been early or late. In all cases, the carcase, after removal of the hide, will appear blanched, the amount of tissue fluids or juices and blood will vary as to the stage of the illness and in advanced cases all will seem to have vanished and a smell of stale bile will pervade the carcase. In a late case the liver will be swollen, soft and yellow, but in an early one scarcely changed.

TREATMENT

I regard a successful treatment of red-water as one in which the patient passes through the attack with little or no very obvious loss of weight and condition, and without any of the so-called catastrophes, and I am of opinion that convalescence should be established under three days. To attain this end the condition must be recognised on the first day of the attack and the animal placed under suitable treatment and control.

The following cases are illustrative:—

(1) Cow treated by owner on January 16th and 17th with mag. sulph. and pot. nit. and sent to pasture by day. January 18th: condition hopeless. Aciron 6 c.cs. Death.

(2) February 24th: Cow due to calve in 14 days. Urine black. Temperature 106°F.; respirations 40; pulse 100. No appetite. Treatment: red-water mixture 1-lb., with molasses by tube; enema. Aciron 6 c.cs. February 25th, 4 p.m.: Temperature 100°F.; fæces soft; some appetite; urine clear in 22 hours; no further treatment. Dropped dead calf on February 27th.

(3) March 2nd: Cow. On red-water farm three months. Given red-water mixture (not visited). Cow supplied with water *ad libitum*. Drank excessively and became distended—uneasy—grunting. March 3rd: Distension absent—urine clearing. No other treatment.

(4) March 13th. Cow (South Devon) due to calve. Temperature 101°F.; urine black; some appetite. Difficulty in emptying rectum, straining. Treatment: red-water mixture 20-oz., with molasses by tube. Aciron 6 c.cs. No other treatment. March 14th: Urine clear; feeding well; calved normally.

(5) March 27th. Cow; urine very dark. Treatment: red-water mixture 1-lb.; Aciron 6 c.cs. March 28th: Urine clear, no further treatment.

(6) March 25th: Red-water mixture sent (not visited).

March 26th: Aciron 6 c.cs. March 27th: Urine clear.

(7) March 26th: Dairy cow, eight months pregnant and very heavy. Urine black. Treatment: red-water mixture 12-oz.; Aciron 6 c.cs. March 27th: Urine clear. March 28th: Twin calves, both dead.

(8) April 5th: South Devon cow, in milk. At 7 a.m. she was normal but at 3 p.m. the urine was quite black. At 5 p.m. temperature 106°F.; appetite good. Treatment: red-water mixture 20-oz.; Aciron 6 c.cs. No other treatment. April 7th, 3 p.m.: Urine clear. No further treatment.

(9) May 14th: Cow, 12 years. On red-water farm since birth. First attack. Her urine was clear at 7.30 a.m. but at 3.30 p.m. it was quite black. Red-water mixture 1-lb. at 5.30 p.m. Drank 10 gallons of water in six hours.

May 15th, 11 a.m.: Temperature 102°F.; feeding well; appearance good; watery diarrhœa; no thirst; urine dark. Acaprin 6 c.cs. No further treatment. May 16th: Urine clear.

(10) April 26th: Steer. Two deaths had occurred on this farm before assistance was requested. Three p.m.: red-water mixture 1-lb. administered. April 27th, 2.30 p.m.: Urine clearing; temperature 105°F. Acaprin 6 c.cs. April 28th: Urine clear; temperature 101°F. Animal appears normal.

(11) May 15th, 10 a.m.: Dairy cow; temperature 106°F.; urine like ink. Treatment: red-water mixture 1-lb. Acaprin 6 c.cs. May 16th: Urine reported clear. No further treatment.

(12) May 19th: Dairy cow. Water black; owner gave red-water mixture 1-lb.; cow purged but drank little water. May 20th, 8 a.m.: Cow appeared so well that she was turned out with the herd into a field on the side of a hill. A cold day and stormy. Three p.m.: Cow down in distant part of field. She became exhausted on walking in and went down twice. Seven p.m.: No fæces passed; temperature 106°F.; pulse 120; passing black urine almost continuously; thigh tremors; takes earth but refuses water. Acaprin 6 c.cs., soda chlor. and bicarb., sugar and milk. May 21st: Temperature 100°F.; urine almost clear; has taken some food; pulse 120; no tremors. May 22nd: Pulse 120. Cow stood with head almost to the ground; when head raised she reeled. Heart failure. Death 6 p.m.

Post-mortem.—Body blanched; no gross change in the liver; right heart contains a large weak *ante-mortem* clot, the latter extending well into the large veins. Here was a cow which had been milking heavily, exposed to cold, and later, having to walk up a hill when in an exhausted condition. A case of bad management.

In reviewing these cases we find that No. 1 had a double dose of mag. sulph. and was at pasture by day in mid-winter. Result, death. Nos. 2 and 7 gave dead calves. This is common in red-water with advanced pregnancy. No. 3 had unlimited water and drank excessively but recovered promptly. No. 12 was a good example of bad management, which ended in disaster. We thus have two deaths, both from complications which might have been avoided, and ten good recoveries.

Water and Sodium Chloride. — Affected animals require water and sodium chloride and after a dose of the latter they will, as a rule, drink freely. The maintenance of the water balance of the body is of great importance in this disease, since the tendency is towards dehydration. Water promotes action of the bowels and thus relieves the liver, etc., and assists, as indicated, in maintaining the blood volume and tissue fluids and the elimination of waste products, which would otherwise poison the animal. Taken by the dehydrated subject water is not retained by the kidneys and the tissues generally, in the absence of chloride, so that the use of the latter becomes a rational therapy in red-water and it is perhaps the most useful of all the common agents employed. After 8 to 10-oz. the patient will often take 6 to 10 gallons of water in the course of as many hours and with advantage. In no case is it advisable to give cattle large amounts of water by tube, since it may lie as a dead weight in the fore stomachs and do harm. Patients refusing water always do badly and it should then be given cautiously by tube or by glucose saline infusion, but in recent years the latter has rarely been necessary.

Catharsis.—Whether diarrhœa is present or otherwise, early purgation is always desirable and the soda salts, sulphate and chloride, aa 8 to 10-oz. antim. tart., 60 to 90 grs. (red-water mixture), are given by tube, 2 quarts of warm water and 1 to 2-lb. of molasses. The animal soon begins drinking and in six or eight hours will probably have a brisk watery diarrhœa with relief to the liver and improvement in the general condition, and thus the patient will be better able to reap the full advantage of any specific agent employed. This mixture becomes dangerous after the second day and should not be repeated in full.

Management.—Keep the patients indoors, provide separate standings for them, and in cold weather clothe. Movement can only impair the heart and roaming over large pastures may be disastrous, since those affected try to follow the herd and become exhausted. When several animals are involved at the same time the difficulties are great as accommodation may be lacking and the progress of each case cannot properly be assessed. However, group inspection and group treatment often mean group deaths, and the latter are then attributed to the red-water rather than to the failure of the human factor—their real source. When the disease breaks out in a batch of non-premunised animals the temperatures of in-contacts should be taken daily, and those with a definite rise should receive specific treatment; at present I would inject Acaprin.

Food and Feeding.—Feeding during the attack requires care. Red-water sometimes sets in quite suddenly: the animal may be feeding and ruminating and the stomach full of ingesta, when it is noted as affected. The beast is driven indoors and drenched in haste, something goes wrong and in a few hours, perhaps, the animal is dead. Here a preliminary fast of a few hours is advisable before dosing in order to avoid accidents. Again, some animals will continue taking a full diet for a few days, passing highly-coloured urine the while, and then suddenly

cease eating and drinking and require the greatest care to pull through. In such cases the diet should be restricted at first, since most of the food taken can do nothing but add to the burden of the portal system and hasten the advent of the vicious circle. Carbohydrate may be given, and recent experiments have shown that there is little or no advantage in giving glucose orally over cane sugar. A few pounds should be given daily and milk is useful, but large quantities of so-called nutritious albuminous gruels nauseate if nothing worse happens. Carbohydrates help also, as already indicated, in maintaining the alkalinity of the urine, and thus favour the passage of hæmatin down the urinary tubules, while the liver is said to be unable to perform its many other functions in the absence of glycogen. Green food is always useful. The craving for earth with animals affected with red-water is remarkable and I have seen patients refuse all food, and even water, until they have had a feed of earth.

Magnesium Sulphate.—Best avoided in red-water but frequently administered. Sometimes it acts well, but on the whole the results are disastrous, particularly should a full dose be repeated. In the late stages, however, with loss of appetite and inaction of the bowels, I have seen a medium dose improve the condition. The magnesium and sulphate ions are not readily absorbed by the bowel but such may happen if the portal system contains little fluid, as in red-water, and poisoning then follows.

Water Clearers.—I do not attach great value to the use of drugs as water clearers. The turpentines are frequently used. They may have some value as stimulants but sometimes lessen the appetite and cause renal irritation.

Stimulants and Tonics.—These have their uses, but there should be little necessity for them following a clearing of the portal system in the early stages accompanied by a dose of Acaprin. For late constipation aloes and liquid paraffin may be employed. Oils and fats are objectionable as they tend to favour an acid condition of the urine.

Chemotherapy.—Specific treatment of red-water in this country has certain drawbacks, since the cases so often occur sporadically and we have to begin our treatment when the piroplasms have already done considerable damage and are perhaps becoming rare in the blood stream. Specific substances, to act to the greatest advantage, should be administered during the period of heavy invasion of the red cells by the parasites and before, or concurrently with the appearance of the red-water, since it seems probable that the hæmolysis, once started, may continue for a period after the piroplasms have disappeared from the blood. It has been stated that the products of the hæmolysis may themselves be hæmolytic and so the ball continues rolling although the piroplasms are no longer to be found in the blood stream.

Antimony Tartrate.—This agent has been given orally in red-water for many years and Stockman suggested its use intravenously. It acts as a gastro-intestinal irritant however administered; in medicinal doses it greatly increases the action of saline purgatives. Used orally for its synergic action in the early stages I think it of value in red-water, and since it is so rapidly absorbed I see little advantage in intravenous administration. Whether it has any specific or parasito-tropic action in red-water in the stages in which it is usually given is not known, but it is quite possible that it has a dual one.

Aciron—Acaprin (Bayer).—Since August, 1932, practically every case visited has received an injection of Aciron (now Acaprin) after the administration of the chloride, sulphate, antimony mixture (red-water mixture) above described. If the patient drinks well, considerable improvement is usually noticed in 24 hours or less and no further treatment is then required.

At first Acaprin was sent out in ampoules of 1 c.c., but this dose was found too small, and I asked to have it raised to 3 c.cs. and later to 6 c.cs., the dose now given. No bad effects seem to follow the injection and it has been repeated on a few occasions on the following day. Acaprin is an urea derivative and is a light yellow, water soluble powder sent out in a water clear, sterile 5 per cent. solution in ampoules of 6 c.cs. for subcutaneous or intramuscular use, and not suited for intravenous injection. It was synthetically prepared by Schonhofer and Henecke and its specific effect on the piroplasmosis of the dog, *Babesia canis*, recognised by Kikuth.

It is difficult to assess the value of any particular drug in the treatment of red-water, since so many factors come into play, but the results so far obtained appear to indicate that Acaprin is of distinct value in the disease and that the earlier it is administered the better.

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The Physics Lecture Theatre at the Queen's University was well filled for the first of the

sessional meetings, held at 11 a.m. on Monday, July 29th, 1935, when the foregoing paper was discussed by the Veterinary Medicine and Surgery Section.

The President of the Section, Mr. J. Ewing Johnston, was in the Chair and introduced the morning's business by saying that at the opening of that first paper of Congress he would like to welcome them all to that first meeting of Congress to be held in Belfast and to Ireland. He sincerely hoped that the Congress would be a great success in every way—socially, intellectually and otherwise. (Applause.)

He would ask Mr. Harvey if he had any remarks to make in regard to his paper.

Mr. F. T. Harvey (St. Columb), responding to the invitation, observed that in his paper he had introduced a somewhat new feature in that he said that he regarded the disease as having two phases. In writing a paper in which the number of words was limited one had to condense matters and he thought he might say a little to make clearer what he meant by that.

An attack of the ordinary disease of red-water should be a short one and the animal should recover without any material damage: that would be the first phase. If it did not improve at the end of the third day and the disease went on, then an entirely new type of disease appeared. One could compare it in one way to the results of the onset of a second invader—but there was no invader—in which there was a considerable change in certain tissues, particularly in the liver. It could be compared with delayed chloroform poisoning or carbon tetrachloride poisoning. If a patient had an over-dose of chloroform the chloroform would disappear from the blood-stream in a number of hours, but the drug damaged the liver cells and when that occurred chloroform poisoning took place and gave rise to the symptoms which were indicative of pathological processes that ultimately proved fatal. The same kind of thing might be said to occur in the second phase of red-water of which he was speaking. The piroplasms disappeared from the blood but left behind a legacy of damage to the blood cells. That had not been pointed out formerly in this country as a factor in the mortality of bovine red-water, and as long as they realised that they were dealing at that stage with another disease, they would appreciate the fact that the ordinary remedies for red-water were perfectly hopeless to relieve the animal.

The only good treatment was to make every effort to get the animal well before the disease produced its effects on the liver.

Discussion

Mr. F. W. Hart (Enniskillen), who opened the discussion, said:—

I appreciate the compliment of being asked to open the discussion on Mr. Harvey's interesting and instructive paper on red-water in cattle, for which I return due thanks.

I may say that I do not propose to offer any theories but rather to give, from a practitioner's standpoint, results of 25 years' practical experience of this disease.

Being a rural practitioner practising on the border between Northern and Southern Ireland, the remarks which I propose to make may be taken as applicable to cases in both areas. This disease is widespread in the grazing districts, but in the cultivated farms where crop rotation is practised it is very seldom met with and indeed in some parts is unknown. It is much more common in wooded or marshy districts which doubtless favour the survival of the tick which carries the infection.

In this country I understand that it is the small parasite *Piroplasma divergens* which causes the condition.

It is a practical observation that cattle reared on infected farms are not nearly so subject to an attack of red-water as the "clean" beasts moved into such farms from non-infected districts. Nor do such beasts reared on infected farms develop the disease so seriously as those that are bought in. It is also particularly noticeable that cases will occur in these "clean" beasts moved into infected farms when exposed to sudden changes of temperatures such as cold blasts, heavy rain or floods, especially in spring or autumn, or other debilitating conditions such as parturition or over-driving. This fact would indicate that immunity is acquired by the cattle reared on infected tick-infested farms where one may presume that a mild constant reinfection is going on. Such animals may develop a mild attack of the disease which is often only brought to the attendant's notice quite accidentally and in many instances such attacks must escape observation.

I should like to ask Mr. Harvey if he has any information which indicates that immunity or tolerance to this disease is hereditary in that the fourth or fifth generations of animals reared on infected farms are more resistant than the first or second generations?

Although one attack of red-water generally confers an immunity or tolerance, I have known the same animal to be affected three times.

Mr. Harvey classifies the type of cases met with and I have also been accustomed to recognise certain types: all of which may be met during the course of a single outbreak.

(a)—(i) *Malignant Form*: In early summer and autumn, when cattle are being changed to new pastures, many cases of this type occur and generally the first few are the worst; whether this is due to a virulent infection or to the early cases not being noticed in time by the owner

it is difficult to say, but as time goes on the cases assume a milder form and might be classified as belonging to (ii) a *sub-acute type*, when the cases respond to ordinary treatment and recover in due course. This is the commonest type met with in practice and which the veterinary surgeon is called to treat. It is usually found in milk cows and store cattle.

(b) *Benign Form.*—This generally occurs in young cattle up to one year old and many cases recover with very little treatment other than a purgative dose and many without treatment. The percentage of recoveries is good and the majority of cases are better within three days.

(c) *Red-Water of Irregular Occurrence.*—These cases are occasionally met with in the winter months or may be seen at any time of the year. They are generally found in heavy milking cows, stock bulls up to any age, and aged poor cows where the breaking down of the red corpuscles may be so small in extent that the urine never becomes discoloured and the patient eventually dies from anæmia and heart failure.

Spring and Summer Red-Water: My experience is directly opposite to that of Mr. Harvey in that many more deaths occur in the spring and early summer than in the autumn; probably because the animals are always in poorer condition at that time of the year even though nutrition is on the up-grade. Climatic conditions, of course, are not so favourable then and may lower the body resistance.

Drenching Accidents: These are more common in red-water than in any other disease, because all sorts of medicinal agents are administered and very often unnecessarily. Proper medicines administered carefully can be given with safety and it is not at all necessary to use the stomach tube unless special conditions warrant it with very valuable animals. I have found it very useful in relieving those cases of over-loaded stomach where an animal drank enormous quantities of water after being drenched with sodium chloride solution, up to 40 gallons being drawn off in this way.

Vomition: In my opinion this is generally due to the administration of large doses of purgative medicine on an over-loaded stomach. If the stomach is full, the animals should always be fasted for at least 12 hours before drenching.

Duration: In the majority of successful recoveries convalescence is established within a week.

Clinical Observations: In the early stages, urine red, pipe-stem diarrhœa, temperature generally about 104 to 106°, heart beats diagnostic and quite audible at a distance. After the first 24 to 48 hours temperature declines, constipation may set in and all the other symptoms become aggravated and the animal appears sick. Nervous symptoms are not a good omen and are generally suggestive of cerebral anæmia.

Heart.—It is of paramount importance that the animal be kept quiet during the whole course of the disease, and on no account should it be exercised, put to grass, or walked for any distance. If found affected with the disease in a fair, saleyard, or market, it should be put under treatment in the nearest available place.

The Lungs.—The only condition likely to affect these organs is mechanical pneumonia due to drenching, but occasionally ordinary pneumonia sets in about three weeks after recovery, due to the animal being put to grass too soon.

The Kidneys and Urine.—The kidneys play a very important part in the red-water cycle, and it will be seen in some cases that the animal passes considerable quantities of albumen in the urine a short time after the original attack of red-water. The quantity of urine passed varies considerably in different cases, and animals passing large quantities generally collapse very quickly.

Post-mortem Appearances.—The carcase is generally anæmic and blanched and the liver and spleen are enlarged.

I should like Mr. Harvey's observations, in those cases in which liver necrosis was found, as to why he believes death was due to the liver condition and not to the anæmic condition of the animal from loss of blood.

Treatment

Getting the case in time is the all-important factor in the successful treatment of this disease. Stockowners, cattle breeders and veterinary surgeons have each their own pet remedies; in fact, the cures for red-water are legion. I notice most of the cases described by Mr. Harvey were either better or dead in about a week. With your permission I propose to offer comments on the following points:—

1. The direct treatment of the disease.
2. Some conditions arising out of, or attributable directly or indirectly to red-water.

The patient should be housed immediately in a good airy box, kept quiet and clothed if necessary, depending on the time of the year and the class of the animal. A purgative dose consisting of sodium or magnesium salts, treacle or sugar, should be given as soon as the patient is in a condition to receive it. That, of course, will depend upon whether the case has been detected early or late, or whether the animal is empty or full. Afterwards water should be allowed on the "little and often" principle. Stimulants should be given every four to eight hours in cold milk and if the patient is very weak alcohol should be given frequently till convalescence is established. During the succeeding days the digestive tract must be kept acting and plenty of nourishing gruels and mashes given frequently. All hay or grass should

be withheld till the digestive tract has regained its normal condition. I do not propose to enumerate all the drugs used in the treatment of red-water but will mention a few in common use: sodium chloride, chlorate of potash, quinine sulph., pulv. antim. tart. in powder or as a solution by intravenous injection, preparations of turpentine, iron, sulphates of sodium and magnesium, mixtures comprising almost everything. Trypan blue was given an extensive trial in 1912 but with unsatisfactory results. Later, intravenous injections of antimony tartrate solution were experimented with but the results were no better. Todorit did not prove any more successful in my hands.

Mr. Harvey in his paper draws attention to a new preparation now called Acaprin. If I may say so, this agent appears to mark an advance in the treatment of this condition. The dosage of this preparation which I have used varies from 6 to 10 c.c. Since March I have treated 30 cases with Acaprin and all have recovered except three—that is a mortality rate of 10 per cent. In addition to Acaprin the majority of the cases received a purgative. The urine generally cleared in from 24 to 30 hours. The benefits attendant upon this line of treatment are:—

(1) Simplicity of administration; (2) the attack is cut short; (3) other medicinal agents are unnecessary, and (4) there is no obvious loss of flesh and convalescence is soon established.

The following conditions I have found attributable directly or indirectly to or associated with red-water:—

(a) *Functional disorganisation of the Stomach and Bowels.*—In most cases this is due to the persistent and unnecessary drenching of the animals with condiments of all sorts and gruels, and the condition may extend over two or three weeks, even if the animals are put on proper medicinal treatment at a late stage.

(b) *Poisoning.*—Generally due to the administration of excessive doses of sodium chloride and turpentine mixtures.

(c) *Gastritis and Enteritis.*—Nearly always the result of using excessive purgative doses which seriously retard recovery.

(d) *Nephritis.*—Generally the result of excessive and long-continued use of turpentine mixtures.

(e) *Albuminuria.*—This is a very serious sequel to red-water and one which I have met with occasionally. I should like to ask Mr. Harvey if he has observed this condition as a sequel in his cases, and if so, what are the associated symptoms. Does the condition follow upon a nephritis? It is certainly puzzling me to account for it, as I have seen it in cases which did not receive turpentine or other agent likely to affect the kidneys. As regards treatment of this condition, I can only say that I am a seeker after information regarding it—my own results being very unsatisfactory.

(f) "*Purpura.*"—If I may use this term. This condition appears about three weeks after the attack of red-water. The temperature is elevated, with swellings on the body and legs and on the under surface of the abdomen, sternum, and intermaxillary space. I should like to ask Mr. Harvey his experience of this condition and what treatment he adopts and the results.

(g) *Hæmorrhage.*—This condition following upon red-water generally takes place from the Schneiderian membrane. It is very serious and not amenable to treatment. I should like to know the reasons for its occurrence and if Mr. Harvey can suggest any treatment.

(h) *Blackleg.*—This is a most unfortunate sequel, always ending in death. It is very common in milch cows and stock bulls of all ages. I have known three milch cows die from blackleg on a particular farm; in fact, all the cows affected with red-water died later from blackleg till preventive measures were adopted by inoculation with blackleg vaccine. It is a singular coincidence that red-water lowers the vitality of the animal to such an extent that it contracts blackleg, whereas the in-contact cows do not become affected so long as they remain free from red-water.

(i) *Pneumonia.*—This occurs generally through the animals being put to grass too soon and is naturally the result of lowered resisting power.

I must apologise to Mr. Harvey for asking so many questions and I should like to thank the Members for their patient hearing.

Principal J. F. Craig (Dublin; President of the N.V.M.A.) said that the subject of red-water was selected as a subject for that Conference because the disease was so widespread throughout that country and it was thought that it would be of the greatest interest to practitioners throughout Ireland. (Hear, hear.)

He thought it was in 1904 that red-water was last made a subject of discussion at a "National" Congress, its primary interest then lying in the fact that it had just been discovered that red-water was due to a piroplasm.

Since that time Sir Stewart Stockman, had demonstrated in Great Britain that the organism could readily be transmitted by direct inoculation with infected blood and also through the tick—the *Hæmophysalis punctata*, and the *Ixodes ricinus*, the common tick in this country. In Ireland the organism present was regarded as the same piroplasm and named *Babesia divergens*. It was somewhat peculiar, but it was the fact, that so far no one had been able directly to transmit red-water by blood inoculations or by means of the tick; and he personally had carried out some experiments of this nature with negative results. Further observations would require to be made before they could determine how it was that red-water in Ireland could not be transmitted directly, but also under what circumstances natural infection took place. It was remarkable that so far they had been unable to clear up some of those points regarding transmission.

Other points in regard to red-water were of clinical interest, and when they heard two practitioners of such experience as Mr. Harvey and Mr. Hart on this aspect of the disease, they knew that most that could be said had already been said in regard to symptoms, course and treatment. They always felt that when Mr. Harvey discussed a subject he did it thoroughly and made the subject interesting and instructive to the Association. (Hear, hear.) That was the first time he had heard Mr. Hart speak on a veterinary subject, but it seemed to him it was a loss to the Association and to the profession that he did not speak more often. (Applause.)

They had been looking for a long time for a specific against red-water in that country and Mr. Hart had told them a good deal about a number of drugs which had been tried, including trypan blue. He (Principal Craig) remembered quite well the series of observations that were made in the case of that drug and, as Mr. Hart had said, no better results were obtained by that agent than by other methods of treatment. They were still looking for a specific. The enquiry to which Mr. Harvey had referred might be the beginning of a series of experiments that would lead to the recognition of a drug that would be as specific against *Babesia divergens* as trypan blue was against the *Babesia bigemina*. They hoped that would be the case and certainly the observations made by Mr. Harvey were extremely suggestive in that direction. (Hear, hear.) The most serious cases of red-water with which they met were those that appeared in animals transferred from a clean district into an infected one. That was brought forcibly to his notice in the case of a herd of Ayrshire cows introduced from Scotland to one of the Department Farms in Southern Ireland a good many years ago. In that case nearly all the animals became affected with red-water and there was a very big mortality. Occasionally one did meet with very acute cases where death occurred within a few hours after the animal appeared ill: a case of that kind appeared, with them, a little while ago on a farm where red-water was occasionally seen. One of the young cows died a few minutes after it had been noticed down and it was only *post-mortem* that a diagnosis of the disease was made. This was a self-contained herd and the animals were brought up on the land where an occasional outbreak had occurred and so presumably they had acquired a certain amount of resistance. A milder case appeared later.

Those remarks were made to start what he thought and hoped might be a big discussion. Practitioners had not come forward as yet, and, frankly, he did not understand why practitioners were not more anxious to contribute to that discussion, considering that the disease was such a common one in Ireland.

Mr. P. J. Howard (Ennis, Co. Clare) stated that that was a subject of particular interest to him as the disease was very common in the part of the world from which he came.

Professor Craig had gone over practically all the ground that he would have liked to cover, but there were just a few phases of the disease, as it occurred in his district, that he would like to put before them in the hope that somebody might give him a little further information.

The county of Clare was one of the greatest cattle-raising counties in Ireland and some of the best cattle in the world were bred there. The county seemed to be divided geographically into two kinds of soil. They had in the west of the county—which was the greatest cattle-raising district—what they called cold-stone land, as distinct entirely from the other side of the county where they had lime-stone land almost exclusively. It was recognised by the people of the county that they dare not take cattle from the cold-stone land and put them on the lime-stone land. Those cattle could safely be transferred to the best feeding lands in any other part of Ireland and it was seldom that anything untoward would occur, but within their own county it was absolutely unsafe to transfer them, on account of the red-water disease. If they did so, within three weeks half the cattle would be dead.

It was also recognised that the disease would be much more severe in the case of older cattle, particularly milch cows: the milch cows that were transferred from West Clare to East Clare would be dead within three weeks—90 per cent. of them.

Sometimes men would tell one that they had been able to bring them through the winter period, when animals were being house fed or hay fed, because they went on with a similar kind of food, but the peculiar thing was that in three or four months' time, when those animals were turned out to grass, they would then get the disease, and very badly.

As Mr. Hart had said, there were as many remedies as there were people trying to cure the disease. (Laughter.) And for all of them a certain amount of success was claimed. There was no doubt that the administration of common salt had probably been more successful than any other in the treatment of that disease. He dared say that a number of animals were killed, not by the disease, but by the treatment administered.

He would like to thank Mr. Harvey for his paper and Mr. Hart for his opening remarks.

Mr. T. R. Thomas (Carmarthen) observed that that was a disease that troubled them very much in South Wales. According to Mr. Hart, all kinds of treatment had been tried, and he would like to ask Mr. Harvey about his experience in regard to the use of Acaprin, which he (Mr. Thomas) had been using since last July. He administered the preparation intravenously and all the animals were cured within ten hours. The symptoms at the beginning of the injection were a little alarming, and he would like to ask Mr. Harvey his experience of intravenous injection of this agent, and if it would not be wise to continue experimenting with it with a view to assessing the dose that would eliminate the alarming symptoms and yet be effective as a cure, for the intravenous route must be more rapidly effective than either the intramuscular or the subcutaneous.

He thanked both Mr. Harvey and Mr. Hart for the way in which they had dealt with that subject; he felt, personally, that their contributions would be of very great benefit to them, as men who were practising in red-water districts. (Applause.)

Mr. W. L. Richardson (Wadebridge, Cornwall) said that he practised in a red-water district in the south-west of England and he had had a good deal of experience of this disease in the last 20 or 30 years. There was not very much that he could say about it: being a neighbouring practitioner of Mr. Harvey, his remarks would be very much on the lines taken by the essayist.

He had tried most of the modern forms of treatment, including that new urea preparation, which, however, he had not administered intravenously. Moreover, he had not used it alone,

but with the "common or garden" treatment, salt, and with good results, for he would say that the mortality from the disease had been lowered a good deal.

He had seen much of the malignant form of red-water of which Mr. Harvey had spoken; it certainly was very alarming; in fact, the animals died *en bloc*, so to speak. The cases they got in the spring of year were in animals that had been badly wintered and had been turned out into those red-water districts. He had seen five or six two-year-old steers dead in a shed, and death had occurred in these cases within 24 hours: nothing that one could do would save them.

Of the drugs that were used, turpentine was certainly one which very often cleared the urine, but it had one great disadvantage—he found that it put the animal off its food and it was essential to keep the patient feeding. It was also necessary to give these animals plenty of water: he had never seen any harm done by allowing an affected animal as much water as it would drink. The animal must, of course, be kept quiet, and must not be driven along the road—that sort of mismanagement was certainly a cause of a great many fatalities.

The brain symptoms mentioned in the paper were not common, and when they did occur, arose in the later stages of the disease. These were usually fatal cases, and the frenzied condition of the animals rendered them a danger to the attendants.

Mr. J. H. McCrea (Londonderry) observed that, while he did not meet with red-water in his area, there was a certain amount of it in a neighbouring district, in fields that had not been ploughed for years and years. Ticks were in evidence all over the place and cattle that came from non-infected areas readily took the disease. He had often to go through an infected area covered with ticks, and in one field he saw two cows lying ill with red-water; for a long time afterwards that particular field was infected.

At the Edinburgh Congress last year he asked various people if they had any injection to suggest, and as a result he got in touch with the producers of Acaprin, which he injected intravenously. A short while afterwards the animal commenced to blow and turned a somersault or two, and he thought it would be dead before he got home. Very much to his surprise, however, the next day it was still alive and the urine had changed; it made an uneventful recovery. The next case he had was also in a milch cow, and this time he was very careful to administer half the dose of Acaprin intravenously and half subcutaneously. (Laughter.) She, too, showed a certain amount of brain disturbance and accelerated breathing; in fact she was almost in a state of collapse. In about 20 minutes she got over those symptoms and the following day the urine was clear.

In consequence of these experiences, he wrote to the makers of the preparation and detailed the symptoms, bordering on collapse, exhibited by the injected animals. Whatever it was they added to the agent, following his representations, it did not help much, and then they recommended that the injection should be made subcutaneously.

Nevertheless, he had the greatest faith in the preparation Acaprin. In all, he had treated from 25 to 30 cases, and he had had only two fatalities, whereas before that the number of deaths was fairly heavy.

His experience in regard to the use of molasses or sugar was the very opposite of that recounted by Mr. Hart.

Professor G. H. Wooldridge (London) said that the subject of red-water was one in which he had been very much interested for a long time. Professor Craig had referred to the paper that was read before the "National" at Dublin in 1904. It did not seem possible to him—since he was responsible for that paper—that that could have been as long ago as over 30 years.

The interest in the disease that he had at that time was engendered, first of all, on account of the ravages that were caused by red-water in Ireland and, secondly, by his having read the work that had been done by Smith and Kilborne in respect of Texas fever. It was proved quite clearly that the *Boophilus bovis* was responsible for its convection and he attempted, in the first place, to establish whether or not red-water in Ireland was due to a piroplasm and, if so, if it was the same one as that in Texas, in America. As he was unable positively to identify any such parasite he hesitated to accept this possibility because he had met with cases of red-water corresponding very closely with cases of Texas fever, in localities in England where ticks were practically unknown, but even now he was quite unable to reconcile these two types of red-water—one, where there was no possibility of tick convection; the other, where the tick was undoubtedly associated with its transmission.

In 1904 he was able to demonstrate the presence of parasites in the red blood corpuscles as described by Smith and Kilborne, but he could not get the same spectacular pictures as they showed. He thought there must be something wrong with his technique in staining, and he secured from the authorities the different methods in detail, but he was unable to get anything like the same size of parasites. He showed specimens and slides of these at that meeting at Dublin in 1904. He then went further in the attempt to transmit the disease by ticks. He bred a considerable number of ticks and placed the resultant larvæ on a number of cattle they had in the college in Dublin. He carefully examined those cattle over a long period, by blood smear and urine examination, but the results were nil and they began to doubt whether, after all, it was a tick-borne disease; it was not until later that they found it was due to a tick with an entirely different life history. The tick responsible was a three-host tick, and he discovered later what was the reason for his failure. It was just this: that all the cattle were housed, and as the larvæ fed on these cattle and later dropped off they were all cleared away when the bedding was changed, and so there was no opportunity for the introduction of the disease.

The reason for his inability to get the same pictures was later shown by Sir Stewart Stockman, who pointed out that the disease in this country was due to a piroplasm not previously described the, *Babesia divergens*, and not to the *Babesia bigemina* which was responsible for the American form of red-water.

The reference at the meeting to the occurrence of the disease in localities where there were no ticks, and the remarks made by Mr. Howard made him wonder whether there was any difference in the tick infestation of the lands to which that gentleman had referred: whether there was an abundance or otherwise of ticks where he got no red-water, or whether it was only a question of the land and herbage that was responsible for the difference in disease in the one district and in the other.

With regard to treatment, much had been said of the use of saline, but he had heard no reference to other purgatives. He recollected quite clearly that in making his enquiries in Ireland at the time of which he had spoken, he was met with one statement that if you wanted to kill your cattle give them salines; if you wanted to save them you must give them oil, and the oily material they used was lard: two or three pounds given in a series of boluses. In those localities where they gave salines, so it was said, the losses were greater; the reverse happened in other districts in Ireland, where lard was used. In some parts of Europe calomel was used with good results, and with good reason, for in these cases there was a severe biliary stasis and calomel was a very important hepatic stimulant.

It seemed that the introduction of Acaprin was likely to go a long way towards solving the treatment of the affection, but, as Professor Craig had said, there was a great deal of work still to be done in regard to its actual production and transference. He hoped that that discussion might stimulate those who were working on that matter to go a little further into the etiology and not to be content with the results of the labours of former days.

He thanked Mr. Harvey for his introduction of that subject, and Mr. Hart for his contribution in opening the discussion: he was sure they all had benefited greatly by their efforts. (Applause.)

Dr. R. F. Montgomerie (Bangor) observed that Mr. Harvey, in introducing his paper, seemed to be a little nervous as to whether he had made himself quite clear: he would like to assure him that "some of us youngsters" would very much like to be able to make their thoughts so freely and readily understandable as could Mr. Harvey. (Hear, hear.)

Mr. Harvey had mentioned that secondary phase of red-water. In North Wales they saw a good deal of the disease and that secondary phase was quite common. He had not appreciated it as a secondary phase until he read the paper. Although his experience really was insufficient to warrant his saying so, he thought Mr. Harvey was quite right in putting that phase down almost entirely to a necrosis of the liver. He had drawn a parallel to what one saw in delayed chloroform poisoning and carbon tetrachloride poisoning, and he (Dr. Montgomerie) agreed that the lesion of central necrosis of the liver lobules with a following fatty infiltration was exactly the lesion one got in carbon tetrachloride poisoning. He would like to ask if the second phase was more likely to occur in the older animals affected with red-water than in the young ones, because in cattle the younger animals would tolerate carbon tetrachloride much better than the older ones, and animals in poor condition would tolerate it better than those in good condition. Did he, then, meet this phase in animals in good condition and in animals of some age, particularly milch cows?

Mr. Harvey had mentioned premunition in connection with that disease. It was, he thought, the general experience that cattle raised on the farm were premunised against Babesia. He did not know if Mr. Harvey had had any experience of artificial pre-immunisation of animals. It might be possible, he thought, to premunise those large batches of animals which were being transferred into a district in which they were liable to contract red-water. He might say that they had made a small attempt to premunise animals in North Wales, but they did not get a result for the simple reason that red-water did not appear in the experimental group of cattle—both injected and control animals remaining healthy. It seemed to him that, if artificial premunition were shown to be possible, its practical application on some farms and districts could be justified.

In regard to specific treatment, he had always had the feeling that the failure of trypan blue was to some extent due to the injection of the drug at the wrong period of the disease. He did not wish for one moment to throw any doubt on the very successful results which were being obtained with that new preparation, but he would like to ask if those results might not be in part related to the fact that the practitioner using the preparation was meeting his case at the proper time at which to inject it. He desired, further, to ask if Mr. Harvey would agree with the suggestion put forward by Professor Wooldridge, *viz.*, that the purgative one was going to use—if one used a purgative—should be some liver stimulant such as calomel. For his part, he was rather chary of using a drug of that type because of the risk arising from the presence of necrosis of the liver. It appeared to him that in this matter of liver necrosis—a subject well worthy of investigation—one might use a drug, or have a condition, which caused quite extensive necrosis of the liver without the appearance of any symptoms. If the extent of destruction exceeded. say, 95 per cent. very serious symptoms appeared, often quite suddenly. This almost explosive exhibition of the symptoms of liver derangement interested him much.

The Reply

Mr. Harvey, replying to the discussion, said that he was extremely obliged for the very gentle way in which he had been handled by Mr. Hart and for the very kind remarks made by various gentlemen in regard to that paper. It was a great pleasure to him to write the paper and come over there to defend it, because the matter was one in which he had always been interested.

It was 40 years or more since he sent his first paper to *The Veterinary Record* and that first paper of his dealt with the danger of drenching animals affected with red-water. Mr. Hart advised waiting some time before one drenched an animal affected with red-water. He (Mr. Harvey) quite agreed that many of those fatalities in which the animals died within a few hours were due entirely to the haste with which the owner or his man drenched it. They did not think at all—as, indeed, one would not expect them to do—about the animal's stomach. The animals might be chewing the cud, apparently all right, and they were driven indoors perhaps and drenched on a full stomach. That was a very wrong thing to do. Let the animal finish chewing its cud, so that the stages of digestion should have a chance of being completed. He quite thought that many animals were lost through hurry to administer drenches.

Mr. Hart disagreed with his statement that more deaths occurred in the autumn than in the spring; but that was so. Animals in the springtime were just beginning to get grass and they knew that they might be short of minerals and vitamins in the autumn and winter, but in the spring they were just starting to make up these nutritional deficiencies and they went through the disease, therefore, rather better in the spring than in the autumn.

One of the speakers mentioned that old animals were more susceptible than young ones.

They knew that young animals stood red-water well and it was rarely that they died from it; older animals undoubtedly suffered more.

Mr. Hart disagreed with the use of the tube. He (Mr. Harvey) disliked drenching in red-water. He wanted to give the animal one dose to get the bowels moving; then, if they could get some specific agent, they would have done all that should be necessary. All his life his dread of treating red-water was the danger of extensive drenching. Since that paper had been issued they had a case in a steer, 18 months old, in good condition. The owner warned him that he had found the water very black and that he had given the animal a red drench. Two hours later, he (the owner) dissolved eight ounces of magnesium sulphate and four ounces of common salt in a pint-and-a-half of water: he had not given one-quarter of it before the animal went down and the breathing became very rapid. He (Mr. Harvey) injected Acaprin but the steer died the next day. Why should the animal have gone down like that? If the owner had let the animal go, or if the medicine had been given by tube, it would probably have got better.

Three big steers were brought in one afternoon with their stomachs full. The owner gave each one-and-a-half pounds of Epsom salts: one was dead under the hour, another died at midnight and the third recovered. That never happened in any other disease of which they knew. He had been using the tube for a considerable time, and animals would take in medicine well by way of it; the breathing was never disturbed and they went on as if nothing had happened; yet, if one drenched an animal, it was fighting against one—it never did that with the use of the tube. Should any man drench a valuable animal and death result, one was inclined to think it malpractice.

Concerning the necrotic condition of the liver, he used the treatment to relieve the portal system because of his ever-present dread of the supervention of the secondary phase. Dr. Montgomerie had alluded to this question of necrosis. There was no doubt that the liver might be considerably damaged and yet recovery take place; but one must not get beyond a certain stage, as Dr. Montgomerie had mentioned.

Mr. Hart had given a long list of things happening in red-water, but in his (Mr. Harvey's) district they did not get these things in cases that failed to reach the secondary phase; in fact, they rarely even needed to pay a second visit. He had no doubt that for some little time after an attack of red-water, if one tested the urine one would get albuminoid. Whether it was that the disease produced albuminoid, or whether there was just a leakage due to some little damage to the uriniferous tubules he did not know.

He quite agreed that animals affected with red-water must have water; but the animal must not overload the stomach with it, as he had indicated in the paper.

His experience was that animals that did not drink well did not recover in the way that the others did.

With regard to blackleg, they rarely met with it in adult animals, but there was a certain amount of lowering of the system and secondary invasion might take place.

Professor Craig had spoken of specific drugs—he could here deal also with the remarks made by Dr. Montgomerie in that connection. The administration of specifics, such as Acaprin, should be made early—the earlier the better: he thought that was in keeping with the fact that the piroplasm disappeared promptly from the blood stream.

Re Mr. Howard's cases, until one knew what the actual condition in those animals was one could not say much about it, but from the history one would suppose that the disease was red-water.

In reply to Mr. Thomas, he had not used Bayer's Acaprin intravenously, as the makers said that it must not be administered by that route, but he had had good results from giving it subcutaneously.

Professor Wooldridge spoke of the use of oil as lard. He objected to oily agents for the simple reason that they were nasty things to give, and also because he thought they might upset the digestion. Moreover, it was very important to get the urine on the alkaline side, and one could not be sure that the urine would not get on the acid side by the giving of fats and oils. In regard to salines, they knew that these agents would clean the bowel out and retain the action of the liver, but the man who gave two or three pounds of magnesium sulphate was over-dosing; as he had said, the less drenching in red-water the better. Calomel would be rather slow in action and one should be able to get the animal better before it could have time to act: some of the specifics would do that, but the changes in the liver of which he had spoken must be guarded against.

As to vaccination, one never knew when red-water was going to break out, and he thought that the man who vaccinated a lot of animals might be trying to prevent something that would never happen. The great trouble there was the changing of stock and the bringing of new stock into infected areas.

He did not think that there was anything more that he could say, except that, while he was away examining there were 15 cases of red-water and they all recovered with one dose of Acaprin. He thanked them for the way in which they had received that paper and for the manner in which they had dealt with it in discussion.

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COCCIDIOSIS IN BOVINES AND POULTRY*

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A study of the voluminous literature dealing with Coccidiosis emphasises the importance and seriousness of this disease. It is a disease of world-wide distribution and the presence of the causative micro-organisms has been reported wherever cattle and poultry are kept.

The disease is due to a protozoal infection, the causative organisms belonging to the class Sporozoa, order Coccidia. The order Coccidia is subdivided into the Adeleidea and the Eimeriidea. The sub-order Eimeriidea is composed of two families, the Selenococcidiidæ and

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the Eimeriidæ, the latter family being by far the more important, and the name Coccidia is ordinarily applied to the members of this family.

While the scope of this paper is of necessity strictly limited, a brief note regarding the life history of these parasites seems necessary. A susceptible animal becomes infected by ingesting sporulated oöcysts. The sporozoites contained in the spores are released within the intestinal tract through the action of the digestive juices (pancreatic chiefly). Each sporozoite invades an epithelial cell of the intestinal mucosa and grows to form a schizont. This body splits up (schizogony) to form a number of merozoites which escape from the host cell and in turn invade other epithelial cells and again form schizonts. This process of schizogony may be repeated for several generations. How often this asexual form of multiplication takes place is not known but ultimately a generation of merozoites is formed some of which will develop into gametocytes after they have invaded new cells. The gametocytes give rise to the male and female gametes. The female gamete (macrogamete) develops into the oöcyst or resistant form on fertilisation by the male gamete (microgamete) and is passed out from the host in the fæces. Under favourable conditions spore formation (sporogony) takes place in the oöcyst, to be followed later by the appearance of sporozoites in the spores. The oöcyst is now in the infective stage and ready to repeat its life cycle.

It should be mentioned that various stages of the developing parasites may be encountered deep in the tissue beneath the epithelial cells of the mucous membrane of the intestine and even oöcysts may be found in the sub-epithelial tissues (*e.g.*, Tyzzer (1929) notes this in regard to *E. maxima* and *E. tenella*).

Considerable evidence has been accumulated in favour of the view that Coccidia of the genus Eimeria are specific for the hosts in which they are found. The early view that Coccidia found in rabbits were also capable of parasitising a number of other hosts, including cattle, is no longer tenable. Even in the avian kingdom it is generally accepted that cross infection does not occur unless between closely related hosts. Guillebeau (1893), Zublin (1908), Galli-Valerio (1918), Andrews (1927), Corcuff (1928), Yakimoff and Iwanoff-Gobsem (1931-32), Patterson (1933a), and Becker (1933), etc., all failed to cross-infect hosts not closely related. Henry (1931) in recording a considerable number of failures in attempting to produce cross-infection in swine, rabbits, bovines, guinea-pigs, chickens, etc., mentions successful cross-infection in chickens by feeding Eimeria oöcysts from turkeys (*E. acervulina* and *E. tenella*). She was also successful in transmitting three species of Eimeria from quail to chickens (*E. tenella, E. acervulina* and *E. mitis*). Tyzzer, Theiler and Jones (1932) in criticising Miss Henry's work indicate that the precautions taken against accidental infection were, in their opinion, insufficient. They were unable to produce cross-infection except with *Eimeria dispersa* of the quail to turkeys and chickens, and *Eimeria dispersa* of the pheasant to the quail. A few other successful cross-infection experiments have been recorded, *e.g.*, Becker (1933) infected the cottontail rabbit of North America with *E. magna* from a Belgian hare and Dieben (1924) infected brown rats with *E. miyairii* from the black rat. Hofkamp (1931) claims to have infected chickens with *E. pfeifferi* from pigeons, and pigeons with *E. tenella* from poultry. Nohmi (1931) states definitely that *E. avium* (*E. tenella*) is incapable of developing in pigeons, so that there is need for further research work in this connection. These successful experiments serve but to accentuate the failures and do not upset the very definite evidence accumulated regarding host specificity. This is a very important advance in our knowledge of coccidiosis, as, frequently, the question is asked: "Do wild birds infect poultry, or do rabbits infect cattle?" In this connection, however, one point requires emphasis and that is that mechanical dissemination of oöcysts through the fæces of animals can take place, *e.g.*, Krigsman (1929) infected rabbits with oöcysts contained in the fæces of rats which had been fed *E. stiedæ* and Perard (1933) made a similar observation with oöcysts which had passed through a dog. Wilson and Morley (1933) in artificial digestion trials have shown that rats will not digest bovine coccidia. Yakimoff and Iwanoff-Gobzem (1931) have also shown that the unsporulated oöcysts of *Eimeria stiedæ, E. perforans* and *E. magna* of the rabbit can pass unaltered through the intestine of rats and mice and still be capable of sporulating. This suggests the possibility of rats and mice contaminating poultry food and being responsible for outbreaks of coccidiosis amongst chickens which are being reared intensively under careful conditions.

Therefore, although oöcysts are specific for their hosts and the evidence is clear, *e.g.*, that the coccidia of the sparrow do not infect poultry, and *vice versa*, yet it is possible for sparrows to infect poultry by transferring coccidia from infected to clean poultry runs, the sparrows simply serving as vehicles for the transmission of the coccidia and not in any way becoming infected themselves.

Oöcysts may also be carried mechanically on the footwear of human beings, while Allen (1932) records the presence of oöcysts in the intestines of flies caught in infected poultry pens. Bearing these possibilities in mind, it

can readily be realised that the opportunities for the spread of coccidiosis on ordinary farms are almost unlimited. Even under fairly rigid experimental laboratory conditions coccidiosis may spread to the control birds. Tyzzer (1929) refers to this difficulty and details most elaborate precautions which had to be taken to guard against this happening.

Infection *via* the egg shell is probably of negligible importance, although Tyzzer (1929) considers that there is presumptive evidence indicating that infection in turkey chicks may be egg borne. Kerr in conjunction with the writer treated the surface of egg shells with infected fæces and incubated them for three weeks. The egg shells were then powdered and fed to 24 chicks with completely negative results. Tyzzer, Theiler and Jones (1932) cite similar experiments carried out by Warner with negative results.

Infection on farms occurs principally through the contamination of the food or water supplies and, as indicated, the possibilties of this occurring are almost unlimited. There are certain factors, however, which tend to control infection. Oöcysts require certain conditions before they can sporulate and become infective. A certain length of time, which varies with the species, must elapse before the oöcyst becomes infective. The length of this period is influenced by the temperature, humidity, exposure to air or oxygen, and freedom from putrefactive organisms. If these conditions are not suitable sporulation may be delayed indefinitely or not occur at all and the oöcysts perish. Oöcysts are capable of withstanding comparatively low temperatures: Wilson and Morley (1933) found that a "culture" containing *Eimeria zürni, Eimeria cylindrica* and *Eimeria smithi* obtained from calves was not destroyed by freezing from January 5th, 1932, until March 3rd, 1932. The temperature at which the "culture" was maintained was −5°C. Perard (1925) found that 50 per cent. of the oöcysts of *E. perforans* in crushed fæces were destroyed at −10°C. and at −15°C. 80 per cent. were destroyed. *E. stiedæ* behaved very similarly. It will be noted that these low temperatures did not destroy all the oöcysts. Perard, working with *E. perforans* at temperature of 0°C. or lower, found that no sporulation takes place; at 5° to 6°C. sporulation occurred in 14 days, at 18°C. in 48 hours, at 25°C. in 20 hours and at 38°C. in 24 hours. At 40°C. there was no development and death occurred in 44 hours. These findings appear to be fairly common to the various types of oöcysts found in warm-blooded animals; the lower the temperature the slower the rate of development, and an increase in temperature up to 30°C. accelerates the rate of sporulation. (Nohmi (1926) found 30°C. to be the optimum temperature for *E. zürnii*).

Wilson and Morley (1933) give the following times for sporulation of bovine coccidia under favourable conditions: *E. cylindrica* one to two days, *E. zürnii* two to three days and *E. smithi* three to five days.

The various species of oöcysts from poultry appear to sporulate more rapidly than those from the bovine species, thus Tyzzer (1929) found that at room temperatures *E. acervulina* would sporulate within 21 hours and the remaining species reported from the fowl inside 48 hours, but it is unlikely that under outdoor conditions in Great Britain and Ireland any of the various species of coccidia found in bovines or poultry will sporulate sooner than 48 hours. The temperatures of brooders and houses, however, are likely to favour rapid development.

Oöcysts appear to be very susceptible to increases of temperature. Fish (1932) found a temperature of 54°C. to be fatal to poultry oöcysts in ten minutes. At 41°C. he found that no development took place but that many of the oöcysts were not killed after a 48 hours' exposure. At 45°C. a 24 hours' exposure was necessary to bring about death, at 50°C. a 90 minutes' exposure was necessary, at 55°C. a three minutes' exposure sufficed, and at 60°C. 15 seconds was sufficient, and so on, the length of exposure necessary falling rapidly with each increase of 5°C. in temperature. Wilson (1931) found that bovine coccidia behaved very similarly when subjected to increases in temperature.

Moisture is essential for the development of oöcysts but it is likely that a minute quantity only is necessary. Exact information on this point is not available to the writer, but coccidiosis has been observed in chickens reared on wire floors which would scarcely favour a high moisture content in the fæces which occasionally soil and cling to intersections of the wire and so spread infection. Drying is very fatal to oöcysts, thus Perard (1925) found that all oöcysts contained in a fæcal pellet left to dry on a blotter for three days became desiccated, deformed and lifeless. Wilson and Morley (1933) have made similar observations on bovine coccidia.

Dehydrating agents such as sulphuric acid, absolute alcohol, etc., are also fatal to oöcysts. Perard (1934) states that under natural conditions desiccation is probably the principal agent of destruction.

Exposure to air or oxygen is necessary for the ripening of oöcysts. Perard (1925) did not find sporulated forms in the intestinal tract 40 hours after death and uses this fact as an argument in support of the view that it is not the body temperature which prevents oöcysts from sporulating in the bowel, but the absence of free oxygen. He, however, maintains that

air or oxygen prevents the growth of anærobes which have the effect of retarding or preventing sporulation. Oöcysts certainly sporulate better in fæces mixed with some preservative such as 2·5 per cent. potassium bichromatic solution or 2·5 per cent. copper sulphate solution. The preservatives act by preventing bacterial growth but unless the mixture is ærated sporulation does not occur except on the surface layer.

Exposure to natural conditions does not appear to be fatal to oöcysts provided they are kept moistened. Fish (1932) cites an experiment of Haughwort in which the latter found that oöcysts of *Isospora hominis* developed after seven daily exposures of three hours each to direct sunlight. Wilson and Morley (1933) found that exposure to sunlight was fatal to bovine oöcysts in 24 hours.

Patterson (1933b) carried out experiments designed to throw light on the viability of *E. tenella* of the fowl. In soil in which the humidity was maintained and in soil weathered under natural conditions, the oöcysts remained infective up to 23 weeks and ten weeks respectively, the maximum periods tested. In soil allowed to dry no infection occurred after ten weeks. Mixing soil with 10 per cent. of unslaked lime did not destroy the infective properties of the oöcysts even after 12 weeks, which was the maximum period tested. Infection persisted in soil at 7°C. and in frozen soil for 23 weeks. Oöcysts were still viable after nine hours' exposure to sunlight in surface soil in petri dishes, but the resulting infections were so mild that they were only recognised at autopsy.

Fantham has shown that the oöcysts of *Eimeria avium* (*E. tenella*) may be infective after two years (cited by Bruce, 1921), and Bruce (1921) found that oöcysts kept in centrifuged fæces in a centrifuge tube were infective after 13 months.

Delaplane and Stuart (1935) found that oöcysts of avian Coccidia survived in the soil of experimental plots for a period of from four to nine months, following the removal of the chickens from the ranges. In soil of a wooded range, they found oöcysts surviving after intervals of 15 and 18 months (the maximum periods tested) following the removal of all chickens. Kerr, a co-worker of the writer's, put day-old chicks in a brooder box which had two years previously contained chicks affected with cæcal coccidiosis; blood was observed in the droppings on the fifth day and deaths occurred on the sixth and seventh days. The brooder boxes during this period of two years were stored in a dark, damp shed.

Putrefaction occurring in the containing fæces is fatal to oöcysts and Becker (1934) states that this is probably the greatest factor in the natural destruction of oöcysts. In contradistinction to this view, Wilson and Morley (1933) state that "bovine coccidia are not so susceptible to putrefactive changes as is generally believed . . . . Oöcysts present in manure piles probably are readily destroyed by decomposition and the resulting high temperature." Perard (1925) found that putrefaction was fatal to oöcysts.

Perard (1925), Fish (1932), Wilson and Morley (1933), Tyzzer, Theiler and Jones (1932), and others, have shown that oöcysts are remarkably resistant to the action of disinfectants. It is a routine laboratory procedure to preserve fæces containing oöcysts with 2·5 per cent. copper sulphate solution or 2·5 per cent. potassium bichromate solution, or 1 per cent. formalin, etc.

Perard (1925) experimented with a wide range of disinfectants: potassium permanganate 1-1000., formalin, 5 per cent. and 20 per cent., phenol 5 per cent., H_2SO_4, 1 per cent., 10 per cent., and 20 per cent., milk of lime, coal tar, sulphate of iron 5 per cent., sulphate of copper 5 per cent., soda lye 10 per cent., quick-lime, chloride of lime, cresyl 2 per cent. and 5 per cent., lysol 2 per cent. and 5 per cent., ammonia 1 per cent., 5 per cent., and 10 per cent., etc. He found that "Seuls le cresyl et le lysol font preuve d'une certaine efficacité, mais leur action est trop lente pour que leur emploi soit pratique et recommendable." Fish (1932) found that iodine suspensoid (new) 1 per cent., supplied by Merck and Company, killed oöcysts in one hour. Andrews (1933) experimented with a material called "Toxite" (one part of a disinfectant base to nine parts of light mineral oil). He claims that this agent sprayed on the litter rendered oöcysts non-infective. The results given in his paper by no means indicate 100 per cent. success and further experiments with the preparation seem necessary.

As already pointed out, oöcysts are extremely susceptible to increases in temperatures so that their resistance can be overcome by such methods instead of by disinfectants. Heat in the form of boiling water or the flame of a painter's blow-lamp is an extremely valuable agent for their destruction and is of great service in rendering poultry houses, etc., safe. The heat generated during the decomposition which takes place in manure piles is sufficient to destroy oöcysts in fæces. Yakimoff (1933) and his co-workers found that oöcysts buried 60 cm. deep in manure piles were destroyed in three hours.

We have, therefore, reliable and practical means of rendering buildings free from coccidial infection and also an efficient method for dealing with infected fæces. Soil contamination is a different problem but efficient drainage to ensure that the surface soil will

become desiccated during a spell of dry weather and the mowing down of any coarse clumps of vegetation likely to preserve the moisture content of the soil are indicated. In addition to efficient drainage all stagnant pools should be wired off and the watering of animals should be done from tanks to avoid the soiling with fæces and churning up into mud of banks of streams or ponds, which on many infected farms seem to be the only places where the animals can be watered.

BOVINE COCCIDIOSIS

The earliest records of this disease are associated with the names of Proeger and Zürn. In 1878 Zürn demonstrated for the first time the presence of coccidia in the intestines and lymphatic glands of a calf which had died of a severe intestinal inflammation. Zürn mentions that this material had been sent to him by Proeger. Rivolta (1878) considered the parasite to be different from the oöcysts of rabbits and named it as a distinct species, *Cytospermnium zürnii*, after its discoverer. Since that date many papers have been published on bovine coccidiosis and it is now generally accepted that there are no fewer than six species of cattle coccidia. It is not known, however, whether all six species are equally pathogenic.

Bovine coccidiosis is of world-wide distribution. Its presence in Ireland as such was first confirmed by Craig (1919). In view of the fact that no less than six species of coccidia have been recorded it is interesting to note that he describes a small round form (16μ to 18μ long by 14μ to 16μ broad and an ovoid form 32μ long and 24μ broad).

The species occurring in cattle have been named as follows, and their average dimensions and morphology are given in brackets. It should be understood that considerable variations in size occur in a species:—

E. zürnii (18·6μ by 14·8μ spherical to ellipsoidal).

E. smithi (30μ by 20μ egg-shaped).

E. ellipsoidalis (23·4μ by 15·9μ ellipsoidal).

E. cylindrica (23·2μ by 13·3μ cylindrical).

E. bukidnonensis (48·6μ by 35·4μ pear-shaped).

E. zurnabadensis (30μ by 20μ cylindrical).

A study of the literature indicates that *E. zürnii* is present in most outbreaks of bovine coccidiosis, and is probably the most important species from a pathogenic viewpoint. Experimental work by Wilson and Morley (1933) indicates that both *E. smithi* and *E. cylindrica* may also be pathogenic. In the writer's experience round forms (chiefly) and ovoid forms have been met with in the microscopical examination of fæces from actual cases of coccidiosis. The forms would appear to correspond to *E. zürnii* and *E. smithi*.

The period of incubation varies. In experimental infections by Wilson and Morley (1933) symptoms were shown in some cases as early as the seventh day. Bruce (1921) found that symptoms appear fairly constantly in 14 days after experimental infection. Galli-Valerio (1918) records that Guillebeau fed oöcysts to three young calves, and that symptoms appeared in three weeks. In natural infections the appearance of symptoms is probably related to the number of oöcysts ingested. In the writer's experience symptoms have appeared in young animals one month after they have been put on grazing where previous cases had occurred.

Symptoms.—These may appear in animals of all ages, but chiefly in young animals, one to two years old. The writer has seen a very acute case in an eight-year-old cow, and cases in cows appear to be comparatively common in Ireland. Cases have been met with during all months of the year, but the greatest incidence occurs in July and August, and curiously enough, in the writer's experience, just as commonly in dry summers as in wet. This is probably associated with the fact that on many farms the animals drink from stagnant pools into which they frequently wade during hot weather. Contamination of the water with fæces is a common occurrence and the margins of such pools are frequently trampled into mud which is stirred through the water each time an animal approaches to drink.

The diagnostic symptom is the appearance of blood in the fæces, which may be diarrhœic or normal in consistency. Diarrhœa is usually the first symptom observed, but it is not uncommon for owners to state that they noticed the animal straining slightly and passing a clot of blood after a normal defæcation, the animal otherwise appearing in good health. A severe diarrhœa soon appears, which may be mixed with blood and blood clots, and shreds of mucous membrane may be passed.

In the early stages, feeding and rumination may be normal, but later the animal becomes dull, loses condition rapidly, ceases to feed or ruminate and grinds its teeth. There is considerable straining as the fæces are passed and the animal assumes a tucked-up appearance. In the majority of cases no marked rise of temperature is noted. In animals which die, occasionally convulsions occur before death. In regard to the actual cause of death in bovine coccidiosis it is probable that both acute anæmia and toxic infection from the bowel play a part.

Animals which are going to recover generally cease to pass blood about the sixth day. The mortality is variable and is generally put at between 2 per cent. and 10 per cent. Serious outbreaks with mortality as high as 40 or 50

per cent. occur occasionally in young stock.

Post-mortem Findings.—Lesions are confined to the rectum (principally), colon, and cæcum. Occasionally the last few feet of the ileum is also involved and the writer has found quite extensive hæmorrhage into the ileum. Blood and blood clots may be found mixed with the intestinal contents. A varying degree of congestion and reddening of the mucous membrane is present. The mucous membrane may appear swollen and show reddened or hæmorrhagic patches.

Diagnosis is based on the appearance of blood or blood clots in the fæces with or without diarrhœa, no marked rise in temperature and the finding of oöcysts in wet films prepared from the fæces.

Treatment.—Many agents have been used in the treatment of this disease, but there does not seem to be any specific drug which is of outstanding value. Various practitioners have their own favourite remedies and success has been claimed for the following methods:—

(1) House the affected animal and keep it tied. Clean the house out thoroughly each day. Feed gruels (yellow or maize meal and rice flour), good hay, and keep the animal warm and comfortable. No drugs.

(2) A purgative dose of raw linseed or castor oil. House the animal; daily cleansing. Stomachic powder (ammon. carb., nux vomica, gentian and ginger) and feeding as in No. (1).

(3) Dover's powder has been used extensively in the treatment of bovine coccidiosis and good results have been claimed.

(4) Mr. W. S. Lamont, Cookstown, County Tyrone, who has had a very wide clinical experience of the disease, informs the writer that in his opinion there is no specific treatment.

He gets excellent results from housing the animal and keeping it tied up, so that it cannot eat its bedding and reinfect itself. He believes that while the disease runs a certain course, recovery can be hastened by giving a drench containing raw linseed oil, Jeyes' fluid and turpentine, followed in 12 hours by a course of astringent powders containing catechu and creta prep. every six hours. The feeding should be of a highly nutritious nature—well-cooked gruels and a little good hay, to encourage cudding. He also states that, from practical observation, it would seem as if the infection could survive on grazings from one year to another.

Numerous other treatments have been tried and many different drugs have been given. Rectal injections have also been used and success claimed for this line of attack. Ithargan, a silver Ichthyol preparation, in the form of a solution 1 gramme in 1,000 c.c. water has been recommended by Yakimoff (1927). Becker (1934) states that this agent "deserves further experimental testing."

From the variety of agents used, it is evident that no very satisfactory treatment exists, and several veterinary surgeons with a fairly extensive clinical experience of this disease have informed the writer that "it runs its course." This is an interesting point in view of Tyzzer's (1929) conclusions that coccidiosis in gallinaceous birds is a self-limited infection. Should coccidiosis in bovines be a self-limited infection (and, from the life history of the parasite, it seems not unreasonable to assume that this is so) then it would appear to be a sound and logical procedure to house the affected animal in a clean house and so tied that it cannot eat its contaminated bedding and so reinfect itself. A dose of purgative, such as castor oil, to hurry the ingesta through the bowel, and with it any asexual forms of the parasite which it may contain, and so prevent the further invasion of the glandular epithelium, would also seem a sound proceeding. This should be repeated daily or every other day until symptoms of hæmorrhage cease. Nutritious feeding and tonics to maintain the condition and bodily vigour of the animal, should assist it in overcoming and cutting short the infection.

Wilson and Morley's work (1933) indicates that animals recovered from an acute attack acquire an immunity or tolerance to the disease for at least five months.

Several workers have reported finding oöcysts in the fæces of apparently healthy animals, notably Wilson and Morley (1933), Robertson (1931) and Becker and Frye (1929), and the writer has found oöcysts in the fæces of bovines which were being examined for worm eggs. Inquiry failed to show any of the usual classical symptoms of the disease, such as blood in the fæces with straining, and in several instances no diarrhœa was present.

Professor Craig, in a private communication to the writer, mentions that he has found oöcysts in the manure of animals which were not showing symptoms. These animals were in herds where one or two cases had occurred, and would therefore be classed as "in-contacts." He also draws the writer's attention to the fact that cattle, after an attack, are often put back in the same fields without any recurrence of symptoms. Several practitioners have confirmed this observation. In addition, it is noted that in a herd only an occasional animal may show symptoms. These practical observations support Wilson and Morley's work that immunity is developed as the result of an acute attack. They also indicate that a tolerance to the infection does exist and emphasise that "carrier"

animals may exist and play an important part in maintaining and spreading this disease.

Disinfection and Prevention.—Thorough cleaning of the houses and packing the litter and manure into piles will ensure the "disinfection" of the litter and manure. The house should then be "flooded out" with boiling water from a boiler, or flamed with a blow-lamp. Systematic cleanings of houses every second day is indicated so as to remove oöcysts before they become infective.

Pastures should be thoroughly drained and all stagnant pools wired off. Arrangements should be made to water the animals from tanks rather than ponds, for they are less likely to be soiled with fæces or with the trampled mud which is such a familiar sight at the break in the bank where the animals wade in to drink.

COCCIDIOSIS IN POULTRY

This disease has received much attention from research workers since Rivolta and Silvestrina (1873) first recorded the presence of oöcysts in chickens. It is only comparatively recently, however, that exact knowledge regarding species and host specificity has been obtained.

Investigations by Tyzzer (1929), Tyzzer, Theiler and Jones (1932) and Johnson (1930) have shown the presence of six species of the genus Eimeria in chickens, three of which appear to be definitely pathogenic. Reference has been made earlier in this paper to the fact that these parasites are specific to the fowl, to a remarkable degree, and that infection with coccidia from other species of birds, such as sparrows, etc., does not occur.

Becker (1934) sets out in tabular form the names and characteristics of the Eimeria occurring in chickens. This table is reproduced here with Dr. Becker's kind permission.

Symptoms.—The term coccidiosis is a comprehensive one and applies to all forms of coccidial infection. In this connection it should be realised that more than one species of Eimeria may be present in an outbreak, and, indeed, it is a very common finding to discover affected birds that are infested, in addition, with various species of parasitic worms. Factors such as these complicate the symptomatology. The investigations of Tyzzer (1929) and Tyzzer, Theiler and Jones (1932) have done much to show the effects of each particular species. Experimental conditions, however, vary widely from the conditions found on poultry farms and there are many factors still requiring investigation.

In Northern Ireland we recognise broadly two main types of coccidiosis, cæcal and duodenal. This appears to be a universal finding. Dalling and Warrack (1931) give an excellent

Characters for the Separation of the Six Species of Eimeria Occurring in Chickens.

Characters.	*E. tenella.*	*E. mitis.*	*E. acervulina.*	*E. maxima.*	*E. necatrix.*	*E. praecox.*
Oöcyst: Size in μ	26–19·5 × 22·8–16·5; avg. 22·6 × 19	19·6–14·3 × 17·0–13·0; avg. 16·2 × 15·5	20·2–17·7 × 16·3–13·7; avg. 19·5 × 14·3	42·5–21·5 × 29·8–16·5; avg. 29·3 × 22·6	22·7–13·2 × 18·3–11·3; avg. 16·7 × 14·2	24·7–19·8 × 19·8–15·7; avg. 21·3 × 17·1
Oöcyst: Shape	Broad ovoid	Subspherical	Egg-shaped	Egg-shaped	Oblong ovoidal	Ovoidal
Oöcyst: Sporulation time	48 hours	48 hours	21 hours	48 hours	48 hours	48 hours
Oöcyst: Prepatent period	7 days	5 days	4 days	6 days	7 days	4 days
Region of intestine most heavily parasitized	Schizonts and oöcysts in cæca	Anterior small intestine	Anterior small intestine	Middle and posterior small intestine	Schizonts in small intestine, cöcysts in cæca	Upper third of small intestine
Position of parasites in tissue	Second generation sub-epithelial	Generally below nuclei of epithelial cells	Above nuclei of epithelial cells	Schizonts above nuclei. Gametocytes deep in epithelium	Similar to *E. tenella*	Below nuclei of epithelial cells
Macroscopic lesions ...	Hæmorrhagic cæca	None	None	Exudate or flecks of blood on mucosa; intestinal wall thick	Whitish opacities and hæmorrhage and exudate in small intestine	None, except mucus cast of intestine
Degree of Pathogenicity	++++	+	+	++	++++	+
Development of immunity	Sub-immediate	Delayed	Delayed ?	Prompt	Delayed	Prompt

description of the symptoms of these two types.

Cæcal Coccidiosis: This is, as a rule, much more acute than the duodenal type, in that an early alarming death-rate follows infection, but it is probable that of the two types, the duodenal one is the more serious from the poultry farmer's point of view.

Cæcal coccidiosis is essentially a disease of young chickens. It is not usual to see the acute hæmorrhagic cæca, so characteristic of this form of the disease, in chickens over four months old. That age itself is not responsible for this seeming tolerance is borne out by the fact that Mayhew (1934) was able to produce acute coccidiosis in birds up to 40 weeks old and Johnson (1927) has shown that cage-reared fowl, *i.e.*, fowl not exposed to infection, are susceptible to cæcal coccidiosis up to maturity.

This would indicate that a tolerance to cæcal coccidiosis is developed, in commercial flocks, as a result of exposure to infection. Beach and Corl (1925), Johnson (1927), Tyzzer (1929) and Tyzzer, Theiler and Jones (1932) hold this view. We have on many occasions found oöcysts in slides prepared from the cæcal mucous membrane in birds up to two years old, but it is only on rare occasions that we have observed an acute hæmorrhagic cæcum in birds over four months old. The symptoms and pathology of this type of coccidiosis are so well known that it is not proposed to describe them. In passing, it may be mentioned that *E. tenella* is the parasite responsible for cæcal coccidiosis.

Duodenal Coccidiosis: While this type of coccidiosis is generally most serious in birds approaching maturity, it may be met with in chickens a few weeks old, and also in adult fowl. *E. necatrix* is now considered to be the parasite principally concerned in its production, although *E. maxima* may also produce similar symptoms. Chronic forms of coccidiosis, due to *E. tenella*, very commonly simulate duodenal coccidiosis. It is not uncommon, however, to find more than one type of oöcyst present in chronic coccidiosis. While *E. necatrix* in heavy infections may produce a rapidly fatal type of disease, deaths occurring in from five to seven days, it is more commonly associated with chronic conditions.

Symptoms.—Most observers agree that unthriftiness, anæmia and progressive wasting are associated with this disease.

Oöcysts are found commonly in birds showing symptoms of paralysis, and the writer has met numerous cases of paralysis in flocks where this paralysis did not occur, or was of negligible importance, the following season after rigid measures of coccidiosis control were adopted. Dalling and Warrack (1931) in this connection observe: "True paralysis symptoms in our experience are not shown by a bird affected solely with chronic coccidiosis, and it seems important to differentiate between so-called paralysis due to this condition and to the condition termed fowl paralysis." Tyzzer (1929) in describing rapid atrophy of skeletal muscles, states that the affected bird, as a result, is unable to stand and becomes helpless. Eickmann, H., and Karmann, P., (1932) stress the importance of coccidiosis in producing similar disease symptoms to Marek's fowl paralysis. Karmann, P., and Presch, L., (1933) in experiments with coccidiosis, draw attention to the number of birds which developed paralytic symptoms similar to those of fowl paralysis. Stafseth (1931) associates paralysis with duodenal coccidiosis. The writer and his co-worker, Kerr, reared Rhode Island Red chickens on a farm which had been free from poultry for four years. The incubator and other appliances were new and had never been used previously. These chickens were intended for a fowl paralysis experiment. Unfortunately, symptoms of paralysis appeared in the chickens before any attempt was made to infect them experimentally. *Post-mortem* examination showed a heavy parasitic infection, both coccidia and intestinal worms being present in numbers. It transpired that the caretaker on the farm had introduced two "broody" hens to rear some chickens of his own. These hens were not in direct contact with the Rhode Island Red chickens and had only been introduced after the Rhode Island Red chicks were hatched. The caretaker fed his own chickens and the experimental lot. The experimental birds were not in contact with fowl paralysis birds, and the parent stock from which they were bred at no time showed symptoms of this disease and over 2,000 other chicks were reared from them during the season, without the appearance of symptoms of paralysis. Beyond evidence of a serious infestation with parasitic worms (round worms and tapeworms) and duodenal coccidia, we were unable to find anything else likely to account for the paralysis. Jungherr (1933) states that "under natural conditions, fowl paralysis apparently does not spread from bird to bird, and it is usually accompanied by low mortality." Incidentally, he mentions that about 70 per cent. of his specimens showed definite lesions of intestinal coccidiosis, and about 20 per cent. revealed parasitic infections. Mayhew (1932a), in referring to paralysis, emphasises that nearly 41 per cent. of his specimens were not infected during their lifetime with coccidia. A probable explanation of these occurrences is that there may be several types of paralysis. Coccidia, of course, are so commonly found in poultry that one is inclined to attribute symptoms to their effects for lack of some more obvious cause. At any rate, no one will dispute Becker's (1934) statement that "more information on the sequelæ of coccidiosis, however, is needed." Certainly,

chronic, duodenal or adult coccidiosis is a serious problem and its presence in flocks should always be suspected where birds are doing badly, wasting, and are dull and sleepy-looking, with occasional cases of paralysis and a steady, if not spectacular death-rate. While one realises that the introduction of this problem of paralysis is a controversial one, and particularly so, when there is evidence indicating that one form of fowl paralysis is a specific disease due to an inoculable agent, it is difficult to assume that coccidiosis, in combination with intestinal worms, plays no part in the production of disease with symptoms fairly similar to those described for fowl paralysis. It may be that coccidia and worms in association with the infective agent of true fowl paralysis, aid the spread and intensify the symptoms of disease. The writer and his co-worker, Kerr, have had experience of disease in flocks of young pullets coming into lay with a mortality varying between 60 and 80 per cent. These birds showed symptoms similar to those described for fowl paralysis. *Post-mortem* examination showed, principally, evidence of serious duodenal coccidiosis associated with various species of intestinal worms. In very few instances could any obvious enlargement or other alteration in the nervous tissue be noticed and sections from the central nervous system when compared with those prepared from apparently normal birds, did not show any noteworthy increase in cellular infiltration. A few (less than 4 per cent.) apparently successful transmissions by inoculation were complicated by the appearance of similar symptoms in control birds. The experimental birds and the controls were found to be affected with duodenal coccidiosis and intestinal worms.

The following experiment is recorded as a matter of interest: In one particular flock where some 400 pullets died out of a total of 600, during a period of three months, eight dozen eggs were obtained and 53 chicks hatched. These were reared by a labourer who had no contact with poultry in any form. The appliances used were new and sterilised and the run was in a garden which had been cultivated for years and to which no poultry had access. No case of paralysis developed in these birds during the three years they were kept under observation, although cases developed on the original farm in birds bred from the same stock. The affected birds were found to be infested with duodenal coccidia (mainly) and parasitic worms. This experiment does not indicate that the type of paralysis encountered was hereditary. It may be, of course, that the assumed virus of fowl paralysis was present in the ground on the original farm. It certainly is of interest to note that by taking elaborate precautions to guard against parasitic invasion, we were able to rear birds free from the type of paralysis encountered, and on a number of farms this has been done successfully.

Treatment.—The trend of scientific opinion is to the view that there is no satisfactory drug or chemical which will either entirely prevent or cure coccidiosis, and there is little doubt that the good results claimed for various agents have been associated in no small part with the sanitary precautions taken. Coccidiosis in fowl is a self-limiting infection [Johnson (1923), Tyzzer (1929), and Tyzzer, Theiler and Jones (1932)]; or, in other words, if reinfection is prevented the disease will have run its course at the termination of the acute period. This fact indicates a theoretically sound method of dealing with an outbreak and one that has given good practical results. The first step is to house affected birds on clean floors and take measures to avoid the contamination of the food and water supply with excreta. The floor should be covered with a dry absorbent litter, such as dry peat moss or sawdust, which can be removed each day and replaced with fresh material. It is a sound economic policy to remove badly affected birds, as even if recovery does take place at least 10-14 weeks elapse before the birds become normal weight again (Mayhew, 1932, b, c). In removing obviously affected birds, one is, of course, removing potent sources of infection. An initial dose of Epsom salts may be given. In addition to the daily removal of the litter and droppings, the food and water containers should be immersed in boiling water. A nourishing diet should be fed. (It may be mentioned here that Kerr and Common will shortly publish work which indicates that the pH of the intestine is not influenced by the feeding of acids such as HCl, alkalis, buttermilk, etc. Their work indicates that it is the nutrient value of the milk which assists in the recovery and not any hypothetical alteration in the pH of the intestine.)

Where measures such as these are adopted promptly, in detail, outbreaks can be cut short and the incidence of mortality greatly reduced. Survivors will require to be guarded against further infection and, after recovery, and a short quarantine period, the birds may be allowed out again, but only on clean runs.

Immunity: The fact that chronic coccidiosis is of such common occurrence does not encourage one in the belief that it will be possible to immunise fowl on a practical scale against coccidiosis. Admittedly, chronic coccidiosis is due to constant reinfections, probably of a mixed character, but these are the type of infections which one would assume would induce immunity. Tyzzer (1929) found that immunity to *E. tenella* develops as the result of a severe attack of the disease, but immunity did not follow mild infections. Fish (1932) found that

one attack of coccidiosis did not confer immunity. Johnson (1927) has carried out experiments with a view to immunising fowl by giving them repeated doses of oöcysts; he concludes that immunity can be produced as the result of a series of doses. He also found that commercial flocks possessed a varying degree of immunity to coccidiosis, and concluded that this was probably due to repeated infections. Jankiewicz and Scofield (1934) also found that a tolerance and, in some cases, a total immunity could be induced by a graduated series of doses of oöcysts (using *E. tenella*). Mayhew (1934) carried out experiments, the results of which indicate that "the development of an immunity or resistance resulting from repeated infection offers little promise of being a practical means of protecting chickens from the disease." The writer agrees with Mayhew's observation that it is not a practical proposition, although experimentally possible, to immunise fowl by giving them graded doses of oöcysts. Apart from the difficulties involved in keeping stock suspensions of the various types of oöcysts, it has been abundantly proved that immunity to one species will not protect against another (Johnson, 1928, and Tyzzer, 1929), and estimating the dosage for different flocks and the labour and expense involved in individual dosing, there is a real danger that numbers of infective oöcysts may pass out in the fæces and seriously infect other birds. The writer is satisfied that fowl which have been reared intensively with careful antiparasitic precautions, are very much more susceptible to infection with coccidia and other parasites than those reared under natural conditions. Johnson (1927, 1928) and Tyzzer (1929) have noted this fact. This practical observation does indicate that birds reared under natural conditions do possess an immunity or tolerance as compared with the artificially reared bird. The poultry industry finds it economically necessary to rear enormous numbers of chickens at all seasons of the year. Intensive rearing was introduced to enable this to be done. Apparently rearing huge numbers of chicks under natural conditions at all seasons is not a feasible proposition. Apart from the troubles arising from chills, etc., should infection be introduced to a number of young chicks on grass runs, one would have no means of controlling it unless an unlimited supply of fresh ground was available to permit frequent changing of the runs, whereas, under intensive conditions, daily cleansing is a practical proposition and enables one to reduce greatly the risk of infection.

Control: Intensive rearing appears to be a necessary evil in the poultry industry. During this period of the chicken's life a reasonable amount of control of infection can be exercised by rigid sanitation, embracing efficient daily cleaning and construction of food and water containers so as to avoid contamination with fæces. Chicks reared in this manner, however, will be susceptible to infection and will not, with age, have acquired any degree of immunity likely to be of protective value. It is, therefore, necessary to exercise unremitting care for the remainder of the bird's life by providing clean ground, maintaining the birds on wire floors so as to reduce the labour of cleaning, and constructing the food and water containers so that the risk of fæcal contamination is reduced to a minimum. Food and water containers should be dipped in boiling water daily. The ground immediately surrounding the poultry house where the birds tend to congregate should be covered periodically, say once a month, with a layer of cinders or gravel. The runs should be thoroughly drained and any depression where water is likely to accumulate should be filled in. Every effort should be made to avoid introducing infection from adult birds. Examination of the fæces from adult stock on various farms has shown that a percentage of birds sometimes exceeding 25 per cent. may harbour coccidia, although it is possible that "carrier" birds do not exist as such, but are simply the subjects of mild continual reinfection. Spraying the litter with "Toxite"—a preparation recommended by Andrews (1933)—may be practised, but the fact that his results were not 100 per cent. successful indicates that complete reliance should not be placed on this method.

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The delegates re-assembled in the Physics Lecture Theatre, Queen's University, Belfast, at 9.30 on the second morning of Congress—Tuesday, July 30th, 1935—to discuss "Cocci-

diosis in Bovines and Poultry," opened as above by Mr. Lamont of Stormont.

The President of the Section of which this was the first paper — the Experimental Pathology Section—was unable to attend Congress and in Professor Buxton's absence the proceedings were conducted by Vice-President Professor T. G. Browne, of the Royal Veterinary College of Ireland.

The Chairman, addressing a fair attendance which gained good proportions as the morning wore on, said that his first duty was to apologise for the absence of the President of the Section, Professor Buxton, so that it fell to him to take his place. They were met to discuss a very important subject, particularly to that country. If that subject had been discussed 15 years ago, it would not have been of nearly so much interest as it was to-day because at that time the poultry industry was a comparatively minor one and up to that time it was believed that coccidiosis did not exist in poultry. It was then that Professor Craig recorded its existence in Ireland. (Applause.)

He understood that the essayist, Mr. Lamont, wished to say something by way of amplifying his paper before the discussion commenced.

Mr. Lamont said that he desired to ask the permission of the Chairman to show a few lantern slides of oöcysts invading the tissues, and their development there. The only remark he wished to make about the paper was that he understood there was some recent work that indicated that immunity to coccidiosis might be bred through immune birds, but his practical experience did not support that work as, if that were the case, they should gradually be getting a hyperimmune stock on the poultry farms in Northern Ireland, where coccidiosis was prominent.

Discussion

Mr. Norman Dobson, of the Ministry of Agriculture and Fisheries, Veterinary Laboratory, Weybridge, who opened the discussion, said:—

I am sure my fellow members of the profession will agree with me that Mr. Lamont has made us all greatly indebted to him for the excellent paper he has given us. Whether we are chiefly interested in coccidiosis in bovines or poultry we can find much of great value in the paper.

From the nature of my work I am primarily interested in coccidiosis in poultry, but I consider, whether we find our work is with cattle or poultry, there is much of common interest to all in the symptoms, prevention and eradication of this condition in these animals.

The introduction of the parasites on to a farm may occur by many very varied routes.

1. *Infected Stock.*—The careful examination of the intestines of a large number of apparently healthy poultry will reveal the presence of oöcysts. Mayhew has observed that chickens which have not developed hæmorrhage and consequently shown no typical symptoms of coccidiosis, pass a much larger number of oöcysts in the droppings than those with hæmorrhage. The introduction of such chickens into a flock can obviously cause a most serious outbreak.

Our own experience on poultry farms tends to confirm this observation of Mayhew. One frequently receives a bird or birds from a farmer with the information that a number of his birds are dying, going off their legs, or going thin. *Post-mortem* examination of the specimens received shows gross lesions of coccidiosis in the duodenum. On enquiry the owner frequently replies that he has occasionally had an outbreak of coccidiosis in previous years but this season has seen no symptoms of the infestation.

2. *Contaminated Ground.*—One has the practical experience of many large poultry farmers that they experience no trouble from coccidiosis with the early hatched chickens when they go on the grass, after their usual six to eight weeks in the brooder house. When, however, chickens of the later hatches go out in late March onwards, they expect outbreaks of coccidiosis to occur. Evidently in Great Britain, at that period of the year, the optimum temperature and humidity have occurred and the oöcysts which have remained on the ground many months are capable on ingestion of causing a serious infestation.

The work published in March this year by Delaplane and Stuart, and referred to by Mr. Lamont, is, I consider, a very valuable piece of work. It supplies us with knowledge of the viability of the oöcysts on ground of varying types. On ground which was exposed to direct sunlight the oöcysts were viable for a period of four to nine months following removal of chickens from the run, but from wooded range the period was found to be 15 to 18 months.

One encourages owners to crop closely all grass, remove coarse weeds and thus allow all the possible sunlight to reach the soil between the grass and the base of the leaves of grass. One frequently finds on otherwise well-managed poultry farms grass 12 or more inches high. The long grass helps to hold the moisture at the base of the grass leaves, and on the soil, an unduly long period after dew or rain, and only the fiercest sunlight really dries the ground. Obviously this shade and moisture are ideal for the life of the parasite.

It has been shown by Johnson that desiccation destroys the oöcysts and that temperatures above 40°C. are detrimental to the life of the parasite.

The closely cropped condition of the grass can be economically maintained by sheep, ducks, geese or by mechanical means. Many good poultry farmers keep sheep on their ground for

this purpose and state it is an economical proposition.

Whilst discussing the question of ground, I think that usually owners do not pay sufficient attention to the layout of their farm and arrange a suitable rearing ground, which can be left free from poultry stock after the young birds have been transferred to other accommodation. Whilst the rearing ground is being rested the grass should be kept closely cropped and treated in the usual manner to maintain good grass.

3. *Food bags* may easily become contaminated with any parasite or infection and returnable bags should be discouraged. Years ago the use of non-returnable bags was advocated, and with the introduction of paper bags this was encouraged, but as yet in this country it is not a universal practice.

4. *Second-hand equipment*, houses, incubators, brooders, food and water troughs may often be purchased cheaply at dispersal sales. These should only be brought on to one's farm after the most thorough cleansing, disinfection and, if possible, sterilisation. The experience of Kerr, quoted by Mr. Lamont, falls into this category of the danger of second-hand equipment. The brooder boxes after being used for chickens affected with coccidiosis were stored for a period of two years in a damp, dark shed, and when again used for day-old chicks, deaths from coccidiosis occurred on the sixth and seventh days. If all precautions were taken to prevent the introduction of infection by means of foodstuffs, water, attendants and vermin, and other groups served as controls, it is an excellent experiment indicating the viability of the parasites over a period of two years and the ease with which infection can occur by the use of appliances which have not been sterilised.

5. *Contaminated Egg Shells.*—I am interested to learn that Lamont and Kerr have carried out experiments using eggs for incubation, the shells of which were treated with infected fæces, and have obtained negative results supporting the work carried out by Warner.

I think a very large-scale experiment is carried out every year by poultry farmers and hatcheries who cater for the day-old chick trade and regularly produce day-old chicks which are shown to be free from this infestation.

6. *The Human Carrier.*—Obviously, poultry attendants by means of their hands, boots and clothing may act as mechanical carriers of the parasites from place to place.

When the presence of coccidiosis is suspected or known to be present on a farm, I consider the use of a bath of disinfectant for cleansing boots (preferably gum boots) and an overall which should be stored on the site of infection are indicated, and all appliances, implements, etc., should be used exclusively for the isolated stock.

7. *Hampers and crates.*—These when returned from other premises should be thoroughly cleansed and disinfected, and if possible sterilised, before being introduced again on to the poultry farm.

8. *Wild Birds and Vermin.*—The writer has carefully shown the possibilities of the introduction of coccidiosis on to a farm by means of wild birds and vermin.

. . . . .

Coccidiosis of poultry has been shown to be a self-limited infestation and our efforts must be directed to this point in the attempt to break the cycle.

As Becker in his excellent monograph states, "There is no drug or chemical known which will either entirely prevent or cure the infection." Until a substance is discovered which has these qualities our attention must necessarily be given to hygiene when attempting to eradicate coccidiosis from the flocks and herds under our care.

By means of hygiene, our knowledge of the life cycle of the parasite, and the prevention of overcrowding—the advisability of arranging small units—and encouraging particularly poultry owners, it should be possible to lessen considerably the annual losses from coccidiosis.

When coccidiosis occurs in cattle, the common practice of isolation and tying up the beast to prevent reinfestation, referred to by Mr. Lamont, is closely parallel to our methods with poultry in removing the droppings daily.

Mr. Lamont's measures of control, rigid sanitation, embracing efficient daily cleaning and construction of food and water containers so as to avoid contamination with fæces, are very sound. I would like to add, if I may be permitted, that the recommendations to poultry farmers should include keeping birds in small units, no overcrowding to be allowed, and if coccidiosis is confirmed in a flock a very vigorous slaughter policy of the affected should be carried out. These methods help in the limitation of the outbreak, and reduce the financial losses, because birds which have been severely affected with coccidiosis are not an economic proposition.

Colonel W. A. Wood (Cambridge) said that he would like to congratulate Mr. Lamont on his paper, which he thought was extremely informative. (Hear, hear.) In it, Mr. Lamont had referred to the connection, if any, of fowl paralysis with coccidia and parasites. He did not think that Mr. Lamont suggested that there was any such connection, but he (Colonel Wood) had got a few figures which he thought might possibly be of interest in that connection.

He had the following findings in making *post-mortem* examinations on 100 birds from outbreaks of disease where there was *no* real fowl paralysis but in which some of the cases had leg weakness—there was no provable fowl paralysis however—and of another 100 birds which were confirmed as having neuro-lymphomatosis or fowl paralysis. In the fowl

paralysis-free lot 56 per cent. had coccidia and in the confirmed cases of fowl paralysis the percentage was 59 per cent. Of course those percentages approximated very closely. Thirty per cent. of the fowl-paralysis-free cases harboured *Davainea proglottina* and 16 per cent. of the fowl paralysis cases; the figures for *Ascaris* were seven and 16, for *Capillaria* 27 and 31 and for *Heterakis* 74 and 76. So that it would seem that these figures suggested that coccidiosis had no connection whatever with fowl paralysis, as there were 56 per cent. in the one lot and 59 per cent. in the other.

Mr. E. L. Taylor (Ministry of Agriculture's Laboratory, Weybridge) said that there was a certain similarity between coccidiosis and intestinal helminthiasis in that reinfestation was an essential part of the development of severe disease. With parasitic worms it was the only way in which the parasites could increase, and it appeared to be necessary also for the ultimate development of clinical coccidiosis.

The oöcysts of Eimeria were to be found almost wherever one looked for them. Otter examined a number of healthy animals and found them to be present in 91 per cent. of healthy goats, 69 per cent. of sheep, 65 per cent. of pigs, 54 per cent. of young cattle and 22 per cent. of cattle over three years of age, and in this paper Mr. Lamont mentioned having found them in 25 per cent. of fowls. The difficult question, therefore, was not so much why do fowls get coccidiosis? as why do they not get it more frequently?

The existence of virulent and avirulent strains of coccidia was one suggested explanation—he did not refer to different species, but to different strains in the same species—and he should be very interested to hear Mr. Lamont's views on that point: it seemed very possible, however, that the origin of an outbreak was not a simple question of the co-existence of virulent parasite and susceptible host, but was largely decided by other factors, concerning the sporulation and the transmissibility of the oöcysts. It was not always easy to produce an outbreak of this disease as, no doubt, several of them had discovered: the sporulated oöcysts were given to a small proportion of a group of susceptible chicks, and resulted in the development of coccidiosis in those which had been dosed. Some of those might die, but other chicks which had been placed in contact remained obstinately healthy, and the coexistence of virulent parasite and susceptible host was found to have failed to produce the disease.

The factors involved probably had to do with moisture, temperature and the presence or absence of substances inimical to the sporulation of the oöcysts. He should like to ask Mr. Lamont whether he considered that researches into the factors governing the transmissibility of that disease had been carried sufficiently far, and whether he thought it possible that the newer line of work on immunity was occupying the attention of investigators too completely.

"In this connection," proceeded Mr. Taylor, "the results observed by Van Es and Olney are of some interest. These investigators studied the effect of environment upon the development of coccidiosis and compared ordinary farm-yard conditions with sanitary conditions in which chicks were kept in runs covered with a 12-inch layer of coarse gravel, the floor of the shelter house being covered with wire netting, the food provided in troughs and the drinking water in special self-cleaning fountains. These measures were found to be inadequate for the control of coccidiosis, which was found to develop and spread just as efficiently under the strict sanitary conditions as under the relatively insanitary ones.

"Possibly, then, it is true that immunity is the key to control and in that connection I should like to refer to Mr. Lamont's concluding paragraph on control. He mentions intensive rearing as being an essential part of modern poultry husbandry and stresses the need for exercising unremitting care for the remainder of the bird's life—*i.e.*, after it has left the brooder—by providing clean ground, sterilising the special water and food containers, etc. Tyzzer holds that to prevent infection in early life is to encourage disease and to court disaster later on. He has shown that young chicks are much less susceptible than unimmunised adults, particularly to *Eimeria necatrix*, which is thought to be principally responsible for the chronic coccidiosis of the adults. I should like to ask Mr. Lamont whether he does not think that some system might be evolved of introducing infection to the very young chicks while they are kept on wire netting floors: turfs might be brought in or grass cut from the general fowl runs, or infective droppings from the general fowl houses actually mixed with the chicks' food. The young chicks would then have a chance of acquiring an infection and developing an immunity while maintained under conditions of rigid sanitation where reinfestation is more or less perfectly controlled and, given an efficient wire floor, the development of a disastrous epidemic only a remote possibility. I am aware that Mayhews has made observations which led him to the conclusion that immunity was not the key to control, the acquired resistance not being of a sufficiently high order; but as dosage is evidently of great importance in producing disease from high coccidial infection it appears not unlikely that a *relative* resistance should be sufficient to prevent coccidiosis. The suggestions which I have made are, of course, not advocated as a means to be put into practice forthwith but are only a suggestion for controlled observation. If the question of adult coccidiosis is a matter of immunity something of this kind appears to be a rational way of attacking it."

Referring once again to the great prevalence of coccidia in poultry, it was clear that the finding of oöcysts had little or no value for diagnosis. He desired to ask, therefore, what standards Mr. Lamont used in diagnosis? Acute forms of the disease were usually obvious enough on *post-mortem* examination, but not so the chronic form. Did Mr. Lamont hold with the view that an infestation of the small intestine might cause irreparable damage to the tissues so that birds might suffer from a protracted wasting disease even after the parasites had been expelled? Although that appeared to be a reasonable explanation, he had suspicions that it was merely a convenient one and that much of that wasting disease in fowls put down to coccidiosis might be due to some other cause.

Tyzzer had observed that oöcysts were not long lived in soil and expressed the opinion that it was not soil infection but carrier birds which were the important factor in initiating an outbreak of coccidiosis; others had, however, observed that oöcysts might retain their virulent infectivity for a period of 18 months or two years. These observations showed that disinfection might still have to be regarded as a most

important step in prevention. The blow lamp was a favourite instrument for that purpose and some observations on its effectiveness as a disinfecting agent recently made by Stafseth were illuminating, showing, as they did, that colon bacilli, staphylococci, streptococci and *Salmonella pullorum* were not instantly killed when the flame of a blow lamp was directed at them on a clean wooden surface, but that they were able to withstand it for 15 seconds. If protected by a small amount of dirt they would doubtless withstand the heat for an even longer period, so that that method of disinfection appeared to be of comparatively little use; similar observations had been made on the use of steam, and it thus appeared to be indicated that thorough cleaning was the most important step in removing dangerous infective material from poultry houses.

Major T. Dalling (Beckenham) said that he had been stimulated to speak by some of the remarks made that morning.

He had read Mr. Lamont's paper very carefully because he was interested in coccidiosis, especially of poultry, and he considered that Mr. Lamont had given them a very useful summary of the present-day knowledge of the subject, but there were one or two points about which he would like to say a word or two.

Most speakers, he thought, had omitted one point, *viz.*, that there were different strains of coccidia and that the different strains affected birds at different ages. It was well known, for example, that the strain which chiefly infested young birds was in all probability *E. tenella* which caused the greatest damage to the cæca and further, that when a young bird had recovered from a severe attack and the mucous membrane of the cæca had healed completely, the bird would not again suffer from an infestation with the same strain even if exposed several months later. It was also known, however, that if a bird had been kept completely isolated from all chance of infestation with the tenella strain, it could be typically infested even up to many months of age and presented the same symptoms and cæcal lesions as did the infested young bird. In such older birds infested with tenella, the lesions were confined to the cæca—the remainder of the intestine remaining healthy. From such observations, it might be assumed that infestation with the tenella type of coccidium in the young chick protected the bird against a similar type of infestation in later life. With regard to the strains of coccidia which apparently caused damage in older birds, it was generally agreed that they caused no damage in the young chick. It would be of the greatest interest to know definitely if exposure of the young chick to such strains rendered them immune in later life. There was a considerable amount of detailed work to be done on these lines. The few observations already made suggested that no immunity was developed and that in all probability, unless considerable damage was done to the mucous membrane of the intestine by a species of coccidium, an infestation by that particular species did not render the bird immune to further exposure to the same type.

Concerning the question of fowl paralysis and its relationship to coccidiosis, he would not for a single moment say that the conditions were in every case unrelated but he would emphatically state that fowl paralysis, *i.e.*, the condition referred to as lymphomatosis or neurolymphomatosis, could develop in the entire absence of coccidia at any time in the life of the bird. To rear birds free from access to coccidia was not an easy matter, as all who had attempted to do so had experienced, but it had been done as shown by very careful examinations of excreta and *post-mortem* work, etc. In such a group of birds kept entirely free from coccidial and other intestinal parasitic infestations, several cases of true lymphomatosis had developed. The clinical disease appeared and was confirmed by *post-mortem* and histological examinations. One knew, of course, that in many cases of true fowl paralysis, heavy coccidial infestation was present but he cited this example of the occurrence of the disease in the absence of coccidia in the intestine. There was no doubt that coccidiosis in young chicks could cause fairly heavy losses, but it was becoming more evident all the time that it was possible to control outbreaks and confine them to the groups of chicks in which they occurred. He thought that the farmer who had had an outbreak of coccidiosis in his young chicks and had been able to control it with a loss of, say, five per cent., was in quite a happy position because he would know that the same birds would not be likely to suffer again from infestation with the same type in later life. As a rule, such recovered birds grew and did well. Coccidiosis of the older birds seemed to be a different problem and he agreed with Mr. Taylor's remark to the effect that the losses due directly to coccidiosis in older birds, were not so severe as was commonly stated. He thought there was quite an amount of wrong diagnosis made regarding such outbreaks and would like Mr. Lamont to indicate how he made his diagnosis in birds, say, eight to ten months of age. Had they in Northern Ireland, found outbreaks of true coccidiosis in birds of that age and had they proved to their satisfaction that these birds had been infested with coccidiosis to such an extent that it had caused deaths in numbers of them and, also, was the coccidial infestation *per se* the cause of the wasting condition to which their attention had been drawn that morning?

They had heard a lot about disinfection at the meeting. He felt that disinfection on a commercial farm might be carried too far and that if by disinfecting they prevented birds from all chance of picking up coccidia, they were probably doing wrong because the birds would have no chance whatever of acquiring any immunity for the future when they were exposed to heavy infestations.

Mr. Lamont, in his paper, said that the types of coccidia infesting older birds were the necatrix and maxima types. He (Mr. Dalling) might be all wrong in what he was saying, but he had always been under the impression that the maxima type did little or no damage and that the common harmful type in the older bird was *E. acervulina*. He remembered well when the necatrix type was first seen in England. He would like Mr. Lamont to tell them whether necatrix appeared to any great extent in Northern Ireland and if he had any evidence that this type or the maxima type did much damage in poultry in his part of the country.

Principal J. F. Craig (Dublin) observed that he had come that morning, rather late, to hear what the discussion had brought forth in connection with the important subject of coccidiosis in bovines and in poultry, and therefore his remarks would be very desultory and he was afraid he might repeat a good many things that had already been said, but he would be very brief.

He had been interested for a number of years

now in coccidiosis in bovines, which he knew was very prevalent in that country. They met with it—and he noticed that Mr. Lamont emphasised the point in his paper—most commonly in the summer and in the autumn, but it was seen in other months of the year; in fact, he thought there was only one month, in the early spring, in which they had not yet had a case.

He thought the disease was most common in cattle from one to two years old, but it was seen in older animals and occasionally in animals as young as eight weeks old and even earlier. There were great peculiarities about its incidence—and that applied not only to that disease, but to a great many other contagious affections. One of these peculiarities was that in some years it was far more prevalent than in others, and even in outbreaks one might find only a small number of animals affected, while some young animals might not develop any symptoms at all, and yet might carry infection. It was difficult to know how it was that the disease appeared in certain lands where sometimes it was known that no disease of the kind had been noted in previous years, yet suddenly it developed.

In regard to the lesions of the disease, one was rather disappointed on making a *post-mortem* because, apart from the hæmorrhages and some definite swelling of the mucous membrane, frequently nothing could be found until one had recourse to microscopical examination.

The treatment differed to a very large extent, just as the treatment differed in regard to redwater in cattle, and he thought they had yet to find a specific.

In regard to coccidiosis of poultry, he had only one remark to make because they were approaching the end of the discussion, and it was a remark that occurred to his mind while Major Dalling was speaking. He asked, how was it that any one came to the conclusion that the symptoms produced in the bird were due to coccidiosis? He thought Major Dalling knew quite as well as anyone else that the only way to make a diagnosis in those circumstances was by a method of exclusion: one found organisms in considerable numbers and one could not find anything else, and the symptoms and the history—if any—which had been given were in accord with the findings at *post-mortem* examination.

He did not want to enter into a discussion, at that time, with regard to the relationship of coccidiosis and fowl paralysis, but he thought—and that was all that he would say—that fowl paralysis was due to a number of different factors, one of which might be a virus.

Mr. K. D. Downham (Newport, Salop) expressed the opinion that Mr. Lamont had hit the nail on the head with regard to the diagnosis of coccidiosis and fowl paralysis when, on page 9 of his paper, he said there was no doubt that there were many causes of paralysis in fowls, and he could not agree with the majority of the speakers that duodenal coccidia did not play a most important part in serious outbreaks of what were known as true fowl paralysis. In his experience of many thousands of birds that were paralysed he had, in most cases, found duodenal coccidia. He did not think he had found a single case in which there was not evidence of chronic enteritis of the first part of the intestine in these birds. He personally was quite convinced that, at all events in his part of the country, the majority of the paralysis symptoms were caused by coccidiosis, particularly of the duodenal type.

With regard to control, they had found at the Harper Adams Institute, where large numbers of birds were reared, that coccidiosis for the last few years had been a most serious disease. Rearing them with the greatest possible care, coccidiosis had always occurred in chickens until this year, when they decided that they would put them out at a very early age and let them take their chance. It appeared that the losses from coccidiosis, up to now, had been greatly reduced, and, again, the use of folding inlets had helped definitely.

He thought that the practical conditions on poultry farms were entirely different from laboratory conditions, and they must recognise this. If one took the ordinary poultry farm where the birds were raised in night arks and the droppings went through, contamination took place as the ground was constantly soiled.

He had never had one case of bovine coccidiosis brought to his notice. The Medical Pathologist reported that a number of cattle were suffering from coccidiosis. He said he had been carrying out a lot of work on that subject and found coccidiosis to be present in the dairy herd of a certain medical institution, and that the coccidia were coming from the musk rats in a particular district. (Laughter.) He (Mr. Downham) had not had any evidence at all, for the last four years, of the existence of bovine coccidiosis in Warwickshire, Shropshire or Staffordshire, but he thought that in poultry it was the most serious condition that was present. He had found at the Institute that coccidiosis could occur in the chick at the age of three days.

The Reply

Mr. Lamont, replying to the discussion, said that he would like to thank the various speakers for their complimentary remarks and he might say that he felt extremely satisfied with the very useful and informative discussion that had taken place. On listening to some of the speakers he had the feeling that the wrong person was giving the paper, because he quite realised his own limitations in this respect; therefore, also, on hearing some of the later speakers he felt that he was not the person to whom some of the questions that had been asked should have been addressed.

Colonel Wood was the first speaker and he gave some interesting statistics showing the presence of parasites in poultry. That was also their experience—that poultry were infested to a great extent with parasites. He (Colonel Wood) drew the conclusion from those figures that parasites were just as common in poultry showing no symptoms of paralysis as those exhibiting such symptoms, and his deduction was that parasites had no connection with fowl paralysis. He was in agreement with Colonel Wood that lymphomatosis was not due to parasites; also with Professor Craig that parasites, nevertheless, had something to do with the production of symptoms similar to those of true fowl paralysis. He did not propose to say anything more about that, because he hoped that at some future time they might have a paper from Major Dalling on that interesting subject.

Mr. Taylor had referred to the existence of virulent and avirulent strains: that was clearly shown. In *post-mortem* examinations of birds very often they discovered that the bird was infested with oöcysts which appeared to be doing no harm, the bird dying from some other cause. The American workers recognised six different

varieties of oöcyst. He must confess that he was unable to differentiate between the various oöcysts morphologically; he went only by the different organs affected. Occasionally they recognised *E. maxima*, but whether or not they were justified in calling it a distinct species on morphology alone, he really did not know.

Mr. Taylor had raised a very important point regarding the transmissibility of infection, and work must be done on it, because that was where all the experiments in Northern Ireland had broken down. The parasite appeared where they did not want it to appear. Tyzzer also emphasised that difficulty and with Theiler and Jones he detailed the precautions he had to take to avoid this transmissibility. Mr. Taylor had referred to that great American authority on coccidiosis—his work was really classical—and also to the particular work in connection with *E. necatrix* infection in young chicks. He noticed that Tyzzer stated that mild attacks of certain parasites did not appear to give immunity. Mayhew's work indicated that where they had a severe attack of coccidiosis with a deeply infective strain like tenella it was really hardly worth while keeping a chick that had been exposed to infection.

They were not likely, at the moment, to make much headway in immunisation unless some new information came to light. Major Dalling also dealt with that point and in doing so he really replied in a very able manner to many of the points raised by Mr. Taylor.

The next matter that was raised was the question of diagnosis and that had been covered by Professor Craig and Mr. Downham. They were often consulted by poultry farmers and they got the history that the birds were not doing well, and some of them "going light" with occasional cases of paralysis. He made *post-mortem* examinations and found, among other things, that they were affected with coccidiosis and one or more types of intestinal worms. They discovered that the general management and feeding seemed all right, except that the ground had been overcrowded for several years. The important point was that when he put those poultry farmers on right lines of rearing—as indicated so ably by Mr. Dobson—the trouble did not appear next year; therefore he thought it had some connection both with coccidiosis and intestinal worms.

Mr. Dalling also dealt with the effect of different strains of coccidia on chicks of different ages. He thought Mr. Dalling also realised that a severe attack of coccidiosis was necessary to induce a lasting immunity.

Mr. Dalling's remarks regarding neurolymphomatosis were extremely interesting, and he (Mr. Lamont) did think that they had transmitted that condition in Northern Ireland, but, as he had said before, their experiments there were complicated by the appearance of coccidiosis and they could not draw any conclusion. They appeared to have transmitted a condition similar to what Mr. Dalling had so ably described.

Mr. Dalling had mentioned the parasite *Eimeria acervulina*, and some American workers were of opinion that that parasite was not pathogenic. Tyzzer, Theiler and Jones stated that it was probably *Eimeria necatrix* that was responsible for so-called adult or chronic coccidiosis, and when such authorities as those disagreed on the point he did not think any apology was necessary from him if he had made mistakes in regard to the different types of parasite and the damage they might cause.

If his recollection was correct, intensive rearing was introduced to avoid the difficulties inherent in grass land management. Mr. Downham's experiences in this connection were very interesting.

He thanked them all for listening so patiently to his remarks and for the very interesting discussion that had taken place and also Mr. Dobson in particular for opening the discussion.

DR. GRIFFITH EVANS, CENTENARIAN, "AT HOME"

SIR FREDERICK HOBDAY, C.M.G., F.R.C.V.S.

Our distinguished colleague, Dr. Griffith Evans, "held court" at his home, Brynkynallt, Bangor, on Wednesday, August 7th, at 11 a.m., the occasion being the celebration of his hundredth birthday, having previously, at a much earlier hour, received the personal congratulations of his family. He is indeed a wonderful man, for he was literally "as fresh as a daisy," although he had, at his own request, on the previous evening been visited after the arrival of the London train by his two veterinary colleagues, Captain Savage and myself—and the interview was of such mutual interest that the midnight hour struck before the lapse of time was noticed.

It was difficult to find a veterinary subject with which Dr. Evans was not *au fait* and his grasp of modern every-day subjects would put many of our present-day graduates "in the shade"; whilst the accurate recollections of "men and things" of 60, and even 80, years ago were astounding. Although, through the misfortune of two very severe accidents involving fracture of each thigh, bedridden, and very deaf, his mental faculties are almost perfect, so much so that there was not the slightest difficulty in maintaining an interchange of ideas and questions by means of a writing pad and pencil.

In accordance with his own request the presentation from his Alma Mater was to be the first (after the private congratulations of his own family) of the series of the ceremonies which had been arranged to do him honour and give him pleasure on attaining his centenary; and the quiet delight of our revered friend was a reward to his daughter (Dr. Evans) and those whose privilege it was to be allowed to be present.

An account of the various addresses and telegrams of congratulations is given below; and when, at the finish, we bade "Good-bye," it was with a feeling of wonderment at the virility of this superman.

THE PRESENTATION CEREMONY

Amongst those present were: Captain W. H. Savage, M.R.C.V.S., and Mr. W. T. Rowlands, M.R.C.V.S., D.V.S.M., of the veterinary profession,

and the following members of his family: Dr. Evans and Mrs. Garfitt (daughters), Miss Garfitt (niece), Mr. G. H. Jones (Registrar of the University of Bangor) and Mrs. Jones (son-in-law and daughter), Mr. Evans (son), Mr. Bevan Jones (grandson), and Mr. McDermid (representing the Press), with several other relatives and intimate friends.

Professor Sir Frederick Hobday, in presenting the congratulatory scroll, said:—

"Dr. Griffith Evans, I have come to Bangor specially to present you with this scroll signed by H.R.H. Prince Henry, Duke of Gloucester, the President of the Royal Veterinary College—your Alma Mater—and by myself as the present Principal and Dean.

"As a great pioneer we are proud of what you have done for veterinary science and we wish you continued good health to see still further, for many years to come, the progress in comparative medicine which was initiated by the discovery you made of the parasites in the blood—when investigating (whilst a Veterinary Officer in the British Army) the disease known as 'surra' in horses and camels.

"The frame which surrounds the scroll is made specially for you from a piece of the wood of the old college."

The presentation scroll read as follows:—

TRIBUTE OF THE ROYAL VETERINARY COLLEGE

TO

DR. GRIFFITH EVANS, D.Sc. (WALES), M.D.; C.M.; M.R.C.V.S.

Qualified 1855

In recognition of the valuable research services to Veterinary and Human Medicine by Dr. Griffith Evans, and rendered with a high courage over a phenomenally lengthy period, this illuminated scroll, from his Alma Mater, is presented by the President, H.R.H. the Duke of Gloucester, K.G., and Sir Frederick Hobday, C.M.G., F.R.C.V.S., F.R.S.E. (Honorary Veterinary Surgeon to His Majesty The King), Principal and Dean of the Royal Veterinary College.

Further it is proposed to set up in the Common Room of the College a carved plaque to commemorate the consent of Dr. Griffith Evans—the Father of the Veterinary Profession—to lead the Veterinarians of the Empire in support of the Royal Veterinary College Hospital Giant Nose-Bag 250,000,000 Farthing Endowment Fund, and in felicitation of his Hundredth Birthday—August 7th, 1935.

HENRY,
President.
FREDERICK T. G. HOBDAY,
Principal and Dean.

DR. GRIFFITH EVANS' ACKNOWLEDGMENT

Dr. GRIFFITH EVANS, in reply, said:—

"Sir Frederick Hobday, I am overwhelmed at the special message from my old college where I began my professional career.

"I feel this has come to me too soon. I cannot find words to express what I wish and what I ought to say. I trust to your kindness if your goodness will consider what I ought to say and take it as spoken.

"Well, now I'll pass away from the formal and come to a little more 'free and easy.' As all this represents my Alma Mater, I should like to say a few words from what I recollect of the lectures and how they have influenced me throughout my life. I recollect well my old Professors Spooner, Simmons and Morton. I think I will commence with Morton.

"Professor Morton was Professor of Chemistry and Materia Medica. He was naturally a poet and sometimes gave a poetical turn to his lectures. One of his lectures, which has been mostly in my mind throughout my life, was about the action of alkalis and acids on each other in the formation of salts. He pointed to an old diagram which had lines indicating the agent which is attracted and repulsed during the change of elements into the formation of new combinations. He told us of the line commonly called 'of attraction' on the one side and 'of repulsion' on the other. He said 'It resembles love.' You may say that one element loves another one better than the one to which it is at present united.

"Some of you will be able to see why I call this the Chemistry of the Divorce Court. The lower animal has a sort of 'Chemical Love,' and you may move step by step up to that of mankind; but there is a higher element, that of 'Friendship,' and I have noticed that in mankind the love which is worth having is that developed on friendship, and that of the Divorce Court is an animal-bred love. I started thinking of this at the college and this is why I am telling you.

"Now I pass from Morton to Professor Simmons, who lectured on the Diseases of Ruminants. In those days we did not dissect ruminants, we dissected donkeys, but Professor Simmons gave us a lecture, preparatory to his lectures on diseases, on the anatomy of the digestive processes of ruminants. I had seen cattle and sheep ruminating but I did not understand why until Simmons explained it, and in the course of Simmons' lectures there ran through my mind the old saying: 'Read, mark and inwardly digest.' This impressed upon my mind 'Rumination'—mental as well as physical, and I have been ruminating ever since!

"In one of Simmons' lectures, he showed us drawings of a condition of the body which we could only find with a microscope. There was no microscope at college then—at any rate for the students—at least, I certainly never saw one! But in ruminating over that lecture, I thought I must have a microscope before I could understand. I asked Professor Simmons how I could get one and he kindly told me that Baker's in High Holborn was the best place to get a good second-hand microscope. I asked at Baker's and was informed that there was a very good second-hand one available for £5. I did not know how to use it, but I bought a book to help me and I was told to be very careful of the lenses; and to clean these I was told not to put "*spittle*" on them, as many had been spoiled in this way. I was told to use clean water.

"At any rate, I started with common things. There were no microtomes then to cut them in slices. I began to observe the blood after studying the actual secretions, and I noticed that there were many differences in those of the various species of animals and in my own.

"I was told at college that before I could understand diseases I must understand healthy animals, so that I went on observing the conditions of the blood in health. I observed also the difference in the appearance of the blood of animals fasting in the early morning before they got any food and myself likewise. The blood seemed to differ after food and during the course of the day. I learnt by practice and close observations that there *was* a difference in appearance, especially in that which concerned the white blood corpuscles. I was told many things at college, where I went like a baby to my Alma Mater for food. They gave me very little food, although I owe it to them that they put me on my way to finding it—but I found that when I got the food I must cook it myself. Now you will understand how I came to find the cause of this group of blood diseases. I was the youngest student at college and I was a ruminating animal! That was the reason.

"Now I come to Professor Spooner, the Principal of the College and Lecturer on the Diseases of Horses. What impressed me chiefly about Professor Spooner was his very frequent confession in his lectures that 'he didn't know.' He wasn't ashamed to say that he didn't know. He was a very remarkable man in this way and he set us an example that it was our duty to try to find out. I think I may say that his lecture on influenza was the one which, of the whole of my life, affected me most.

"He always had his snuff box, which he tapped, and out of which he took a pinch of snuff before he began his lecture. He then said: 'Our subject to-day is influenza. A serious disease amongst horses. Gentlemen, what is influenza? The name indicates something 'influencing'—influence of one animal upon another. What is influenza? '—and then he took some more snuff—' Gentlemen, I ask you again, What is influence? God knows! I don't.' Then he went on to say: 'Gentlemen, we all influence each other. In fact, we all suffer from influenza.' He then spoke of the way in which influenza was infectious and how 'infection' differs from 'contagion'; illustrating how it affected other animals without their actually touching one another. I ruminated over that lecture on influenza and since then it has been very helpful to me, and quite lately I found in the Oxford Dictionary the definition of influenza. This all commenced with Professor Spooner's lectures. Then he went on to treatment of influenza. He said that he did not know any medicine which was of any good—confession of his ignorance. I was told that as influenza influenced other animals to become sick the sick animal must be segregated; and this also applied to all infectious diseases. If impossible to segregate absolutely, then do it as far as possible and allow plenty of fresh air and keep them free from draughts. In respect to feeding—the animal itself knows best about that. Don't force it to feed, but always allow a plentiful supply of water. In course of time 'Nature' will come in. Professor Spooner impressed me with the natural power of recovery and said that we should help that as much as possible."

. . . . .

During the whole of the time of the delivery of this dissertation, which was given in almost stentorian tones and apparently quite without effort, the audience was in rapt silence and amazement at the accuracy of the phraseology and the power of recollection expressed throughout; and one could, literally, have "heard a pin drop" when it came to completion.

It had just been finished when the telegram from Their Gracious Majesties the King and Queen was brought up specially from the post office by the Chief Clerk, Mr. T. Evans. This read as follows:—

"The King and Queen are much interested to hear to-day you are celebrating your hundredth birthday, and desire me to convey to you their hearty congratulations. Their Majesties are aware of your distinguished services to veterinary science and send you their best wishes on this great anniversary."

Telegram from H.R.H. the Prince of Wales:—

"With sincere congratulations on your hundredth birthday."

The telegram from the Council of the Royal College of Veterinary Surgeons read as follows:—

"The President and Council of the Royal College of Veterinary Surgeons send you hearty congratulations on your hundredth birthday and sincerely wish you a continuance of good health."

(*Signed*) Bullock, *Registrar.*

Mr. Lloyd George sent the following message:—

"As an old friend, I send you my heartiest congratulations on the celebration of your hundredth anniversary. The Principality feels great pride in one of her sons whose remarkable researches have brought so much relief to human suffering and whose discoveries in veterinary surgery have had such far-reaching results in the preventing of disease among our dumb friends."

Other telegrams received were from the following:—

Liverpool School of Tropical Medicine.
National Veterinary Medical Association.
Manager, National Provincial Bank, Bangor (Dr. Evans is the oldest depositor).
Matthew Dugdill, M.R.C.V.S., Patrington, Hull.
Mrs. Evan Jones—once organist—birthday dates coincide.
Mr. and Mrs. Humphrey Davies.
The Provost and President of the National Welsh School of Medicine.

At this stage an Address from the Council of the City of Bangor was brought personally by His Worship the Mayor (Alderman Richard Thomas, J.P.) and the Town Clerk (Mr. J. Penter Williams). It read:—

August 7th, 1935.

"Dear Dr. Griffith Evans,

We are to-day highly honoured by being allowed to wait upon you, as one of our respected Freemen, to convey to you the heartiest congratulations of the Aldermen and Councillors of this Borough on your attainment of your hundredth anniversary. Our pleasure is all the more because these good feelings and congratulations are shared by the citizens of Bangor, generally. We all join in wishing you, during the remainder of your days, peace and happiness—and, above all, that you be spared the suffering of any pain.

On behalf of Bangor,
Yours sincerely,
(*Signed*) Richard Thomas, *Mayor.*"

In reply to this, Dr. Griffith Evans said:—

"Your Worship the Mayor,

"I do not know what to say, but in a few words you will understand.

"I have just been receiving, through Sir Frederick Hobday, the congratulations of my old Alma Mater, the Royal Veterinary College, and now there has just arrived a telegram from Their Majesties the King and Queen.

"Their Majesties, I am sure, will understand that in all experiences of this kind, no congratulations could be more thankfully received than of the people amongst whom I have lived and that any exultation I have felt at the communications, that of gratitude to my home people must come first. I appreciate very highly that this is the second time you have come.

"I wish my dear wife were here to see this, as whatever good I have done is due to her help and I would she were here to share it."

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Aug. 26th.—Meeting of the Editorial Committee, N.V.M.A., at 2, Verulam Buildings, Gray's Inn, W.C.1, at 4 p.m.

Sept. 24th to 25th.—Jubilee Memorial Prize Examination.

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THE 1935 CONGRESS NUMBER

Members or subscribers requiring additional copies of this issue are requested to make early application to the Editorial Representative, N.V.M.A., 2, Verulam Buildings, Gray's Inn, W.C.1, enclosing remittance at the rate of one shilling a copy, post free.

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OUR ILLUSTRATIONS

The very considerable extent to which this number of our journal constitutes a pictorial, not to say "snappy" record of Congress week, is due in large part to the thoughtfulness of Mr. George Howie, of Aberdeen, and Mr. R. C. Locke, of Manchester, in remembering our needs in this connection. We are deeply indebted to them for this service and, needless to say, neither is the subject of the reference made elsewhere to the particular camera fiend encountered on the Giant's Causeway!

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ROYAL (DICK) VETERINARY COLLEGE ALUMNUS ASSOCIATION

The Annual General Meeting and Dinner were held in Thompson's Restaurant, Donegall Street, Belfast, on Thursday, August 2nd, Dr. Bradley presiding over an attendance of 34 members. The usual informal character of such reunions was adhered to, the reminiscences of Mr. Hugh Gilmore being the feature of the evening.

The Secretary reported the death of Mr. Hood, Tanganyika, a life member, under sad circumstances when on leave and was instructed to

convey the sympathy of the Association to his widow.

After the financial report had been discussed the Secretary reported on the state of the College New Field Fund which now stands at about £840 and asked members to support the efforts being made in Edinburgh. It was felt that the Secretary's appeal required an immediate reward and as a result of his importunity the fund benefited to the extent of four guineas.

It has always been the custom to make a collection at the Annual Meeting on behalf of the Victoria Veterinary Benevolent Fund and this year the sum realised was £3 11s. 6d.

Professor W. C. Miller, Royal Veterinary College, London, was unanimously elected a member of the Executive Committee.

W. M. Mitchell,
Hon. Secretary and Treasurer.

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PERSONAL

Colonel Dunlop Young, Veterinary Adviser in Britain to the Canadian Government, is, on the invitation of the Minister of Agriculture, about to make a tour of the Dominion. He sails on the "Empress of Britain" to-day.

Appointment.—Mr. J. C. Bennison, Dorchester, has been appointed Assistant County Veterinary Officer for Cumberland.

On Leave.—Following is the list of Veterinary Officers in the Colonial Service who are now in this country on leave: Mr. E. G. Prentice (Nigeria), Mr. J. D. S. Tremlett (Tanganyika Territory) Captain F. E. Jones (N. Rhodesia), Major J. M. Smith (Palestine), Mr. R. J. Roe (Cyprus), and Captain H. V. M. Metivier (Trinidad).

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R.C.V.S. OBITUARY

Johnson, Edward George, Drake House, Beighton, near Sheffield. Graduated London, March 30th, 1880; died August 11th, 1935, aged 78 years.

The late Mr. Johnson, who was a Londoner by birth, had lived in Beighton for more than 50 years, and at one time was in practice in Norfolk Street, Sheffield.

He acted as a veterinary assessor for a number of the leading insurance companies.

Many years ago he was an officer in the Derbyshire Yeomanry, and during the war, served as a captain in the Royal Army Veterinary Corps. He acted as honorary veterinary officer to point-to-point meetings in the district promoted by various hunts. A thorough sportsman, he was a keen follower of the hounds, and was an expert shot.

For many years he was a member of the Derbyshire County Council, and was chairman of the Beighton School Managers before the control was taken over by the County Council.

Captain Johnson is survived by his widow, a son and four daughters.

The following members of the profession were present at the interment: Mr. William Collinson, M.R.C.V.S., of South Anston, Sheffield; Mr. H. H. Laycock, M.R.C.V.S. (Sheffield) and Mr. Herbert Thompson, M.R.C.V.S. (representing the North Midland Veterinary Association).

DEATH OF Dr. A. S. ALEXANDER

The Glasgow Herald reports the death of Dr. A. S. Alexander, who was an outstanding figure in the veterinary profession in the United States of America, and one who influenced progress in the pure breeding of horses throughout North America. Dr. Alexander was a native of Glasgow and was educated at Glasgow Academy, at the Andersonian College and at Glasgow Veterinary College. He gained the gold medal of the Highland and Agricultural Society in 1882 just before he emigrated to the United States. Five years later he returned to Scotland to be married to a granddaughter of the late Mr. James Beattie, of Newbie House, Annan, who owned a famous herd of Shorthorn cattle in these days, and who had an international reputation as a stock breeder.

At the time of his death Dr. Alexander was professor emeritus of the University of Wisconsin. He was the author of the Wisconsin stallion registration law in 1906, the first of its kind in the United States, and he was a regular contributor to many agricultural journals over a long period of years.

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LYDIA RABINOWITSCH

Frau Lydia Rabinowitsch-Kempner, who recently died at her home in Berlin at the age of 63, will be remembered as a pioneer of bacteriology and particularly on account of her classical work as Koch's assistant in his researches into tuberculosis in animals. She received her early medical training in Zurich and Berne, and after publishing her first work (1897) on a saprophytic acid-fast bacillus which she found in 60 per cent. of samples of butter taken in Berlin, she went on to publish a series of investigations carried out in the Berlin Zoological Gardens, some of them in conjunction with Koch, on the avian strain of tubercle bacillus, on spontaneous tuberculosis in wild animals, on hereditary transmission through the eggs of birds, and on Johne's disease. Later she became editor of the *Zeitschrift für Tuberkulose*. She also worked on trypanosomes under the direction of Koch, and in 1902 went to study the plague epidemic in Odessa with her husband, Walter Kempner, another of Koch's assistants. On the death of Koch she went to work under Orth at the Pathological Institute, and continued there until her appointment as director of the bacteriological department of the municipal hospital in Berlin-Moabit. In 1912 the title of professor was conferred upon her as being one of the first women bacteriologists.

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Dr. ERIE EVANS AND THE DISCOVERY OF *T. EVANSI*

It is with much pleasure that we devote a number of pages in this issue to further references to the celebration of his centenary by our revered colleague, Dr. Griffith Evans. Well worthy of a place in this column, moreover, is the reproduction from the current issue of the *British Medical Journal* of the following extract from a letter written to that periodical by Dr. Erie Evans (Dr. Griffith Evans' daughter):—

"As my father cannot recollect either the date when the name *Trypanosoma evansi* was fixed or the person who was responsible for so naming it, the following information from the Secretary of the Royal Microscopical Society may be of interest. He states that Evans described the organism occurring in the blood of animals suffering from 'surra' in 1880. In 1885 Steel

redescribed it, and thinking it was a spirochæte named it *Spirochæta evansi*. Crookshank, in 1886, recognised its similiarity to the trypanosome of fish known as *Hæmatomonas mitrophanor* (1883), and at first referred to it as *Hæmatomonas evansi*, afterwards changing the name to *Trichomonas evansi*. It was Chauvrat (1896) who amended the name to *Trypanosoma evansi*. With reference to the personal touches in Dr. Ivor Davies' narrative, as it appeared in the *Journal* of August 10th, page 274, I may add that my father first met Osler in Toronto. He never lived at Cardiff, though he often paid me brief visits when I lived there. Since his retirement from the Army in 1890 he has always lived in Bangor, and when I retired from practice in Cardiff I came here to live with him. He never met Osler in Cardiff, and Osler was never in my house. My father and I had the pleasure of visiting him at Oxford when the former was staying with me in Cardiff. This was soon after Osler's visit to the Cardiff Medical Society, mentioned by Dr. Ivor Davies in his note."

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WHOLE-TIME VETERINARY OFFICER FOR OXFORDSHIRE

The Oxfordshire County Council has adopted the recommendation of the Local Government, General Purposes and Selection Committee that a full-time Veterinary Officer for the better administration of the Diseases of Animals Acts and Orders and the Acts and Orders regulating the supply of milk, be appointed.

Alderman F. W. Young, in moving, said the committee were anxious that the agricultural side of the work should be constructional and helpful to farmers, and the appointment of a full-time veterinary officer was in conformity with the practice in other counties.

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ROYAL VETERINARY COLLEGE HOSPITAL ENDOWMENT FUND

Undergraduate's 500 Miles' Ride

A Cambridge undergraduate is to cover 500 miles on a veteran war horse in the cause of charity in a few weeks' time. He is Mr. Norman D. Lance, a student at St. Thomas's Hospital, who is taking a summer course at Christ's College. His object is to support the fund with which the Royal Veterinary College Hospital is endeavouring to make certain the continuance of its invaluable work for veterinary science. Mr. Lance is to ride a 31-year-old horse named "Brenda," which served in France as the mount of a medical officer and now belongs to his father, and he will be accompanied by his sister, Miss Daphne Lance, riding "Josephine." Each will carry one of the appeal "nosebags."

Their journey, which began yesterday, will be from Heathfield in East Sussex, to Lewes, thence along the South Downs by way of the Devil's Dyke, Steyning and Chanctonbury Ring to Angmering; from there to Arundel, through Arundel Park, and along the Downs again to Goodwood; through Goodwood to West Meon, on to Winchester, along the Roman road to Salisbury; then to Wincanton by way of Salisbury Plain, on to Somerton, and thence to Taunton.

They will stay at Taunton for a few days to give the horses a complete rest and will probably return by the high ground farther south —the Blackdown Hills and the Dorset Heights, turning up north to Salisbury by way of Shaftsbury, and thence back along the old route from Salisbury to East Sussex.

Mr. Lance's sole connection with the college is his love of horses and dogs, and in making his unusual tour he is actuated by a desire to make some return for all the happiness they have given him.

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SPAHLINGER VACCINE REPORT

The Ministry of Agriculture for Northern Ireland announces that the report on the work which it has been engaged in since 1931 to determine the efficacy of Mr. Henri Spahlinger's vaccine for immunising cattle against tuberculosis and other matters connected with the vaccine will be released to the public on October 1st. The report will be issued as an official publication of the Government of Northern Ireland, and will include in addition to a detailed account of the work since its inception, a full *post-mortem* report on every animal.

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MILK MARKETING SCHEME TO CONTINUE

The milk producers' ballot to decide whether the Milk Marketing Scheme should be revoked or continued has resulted in a very large majority for the continuance of the scheme.

The result of the ballot was announced on Monday, as follows:—

Producers' Individual Votes

For continuing the scheme, 79,711 (81 per cent.).

For ending the scheme, 18,747 (19 per cent.).

Votes Based on Cow Population

For continuing the scheme, 1,431,342 (86½ per cent.).

For ending the scheme, 222,722 (13½ per cent.).

The poll, taken on the petition of 500 registered producers, was conducted in accordance with the provisions of the Agricultural Marketing Act, 1931. For the scheme to have been revoked it was necessary that those voting for its revocation should have represented (*a*) more than half the total number of registered producers voting on the poll; and (*b*) registered producers who are capable of producing more than half the quantity of the regulated product which all the registered producers voting on the poll are capable of producing.

In effect, this system of voting means that each registered producer had a personal vote and also one for each of his milch cows. In neither case was the requisite majority obtained, and the milk scheme therefore continues.

* * * * *

THE THREAT TO THE HORSE

Horse Association President's Protest to the the Minister

The following is the text of a letter sent by the President of the National Horse Association to the Minister of Transport with regard to the proposed restriction of horse traffic in London and other principal cities:—

Sir,—My attention has been called to a statement made by you in the House of Commons on July 24th to the effect that it is desirable, consistent with the avoidance of undue hardship, to accelerate the freeing of streets from horse-drawn vehicles, and that to this end you are prepared to consider any proposals which may be put forward by the responsible authorities for their own areas, also that your Department

approaches on all suitable opportunities the principal users of horse-drawn vehicles with the object of achieving the more rapid substitution of motor for horse-drawn vehicles in the Metropolis.

You said also that you were considering with modifications some scheme for giving notice that after a definite period of years no more horse-drawn traffic would be allowed in the streets of the principal cities of this country.

In the first place, I should like to point out the very grave injustice which would be inflicted on those concerned with the use of horse-drawn vehicles if such an arbitrary ban were to be imposed. Owners and drivers of such vehicles contribute like other ratepayers to the upkeep of the streets and roads of this country, and they would rightly regard it as an intolerable act of tyranny if they were to be prevented from using those streets and roads. If it is suggested that their removal is necessary to relieve congestion you will appreciate that those concerned with horse-drawn vehicles cannot agree that they are responsible for a state of affairs which did not exist before the introduction of mechanically-propelled vehicles, the presence of which in excessive numbers is mainly responsible for the traffic difficulties in our cities.

In the second place, it is an indisputable fact that for particular categories of delivery work a horse-drawn vehicle can be operated far more economically than a mechanical vehicle, and this fact is a very material consideration in the balance-sheets of the firms concerned.

In the third place, intolerable hardship would be imposed on the numerous drivers of horse-drawn vehicles, who would necessarily be thrown out of employment if the possibilities of their making a living were thus removed.

In the fourth place, it should not be forgotten that whereas horses only require for their maintenance fodder that can be produced in this country, motor vehicles are dependent on supplies of petrol, rubber and other materials the bulk of which have to be imported into this country, to the detriment of our trade balance.

In conclusion, I would like to point out that many tenant farmers in this country are largely dependent on the livestock breeding industry in which the breeding of horses of every type plays a very important part. To these farmers it would be disastrous if the many hundreds of thousands of horses used for draught purposes were not allowed to be driven in the streets and thus rendered valueless.

Yours faithfully,

James Forshaw,
President.

The Rt. Hon. L. Hore-Belisha, M.P.,
Minister of Transport,
S.W.1.

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Protests Spread to Scotland

Throughout the length and breadth of the British Isles agriculturists are at one with city horse users in protesting against the Minister of Transport's disclosure that he has in contemplation the driving of all horse traffic off the streets of London. Says the *North British Agriculturist*—in a contribution typical of many at present appearing in periodicals devoted to farming interests—"Such a threat to the horse-breeding industry of this country is a challenge which cannot be ignored and it is satisfactory to note that it has already been taken up by the English National Farmers' Union which appropriately regards the attitude of the Minister as an 'unwarranted interference with the interests of a legitimate industry.'

"It is a rather remarkable thing that despite the enormous development in mechanical transport there is still a very extensive industrial use of the horse-drawn vehicle. The 'brewer's dray' is still a notable feature of the transport traffic not only in London but many other large cities both in England and in Scotland, and this fact has had its influence on the heavy horse breeding industry. The maintenance of this industry is a matter of the highest importance for the agricultural industry, and it may be safely assumed that any alteration in the public transport system which would have the effect of interfering prejudicially with that industry must be strongly resented by farmers all over the country. To say the least of it, all reasonable people must regard it as unfair that there should be any suggestion of a studied threat of what must inevitably prove an injurious gesture towards the agricultural industry.

"It can at once be imagined that one specific industry would stand to benefit substantially should the Minister of Transport's suggested scheme materialise. That is the motor trade, as speaking in the House of Commons he stated that he was putting himself into communication with the largest users of horse transport in London as to their intention to accelerate voluntarily the substitution of motor for horse-drawn vehicles. All good luck to any trade which gets an official hitch along in this way, but when it means a nasty set-back for another industry, less well able to afford it, there seems to be solid ground for complaint. And after all everything cannot be sacrificed at the Shrine of Speed. There must be a generous measure of give and take, and in any case in view of what would appear to be looming ahead it will be up to organised agriculture in Scotland to keep a watchful eye on the situation. If work horses are to be turned off the streets of London they will have to go elsewhere as well, and that savours just a little too much of class legislation."

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HORSE BREEDING: IMPROVED POSITION

A summary of the Department of Agriculture for Scotland's operations under the Horse Breeding Act over the past ten years has been issued and the revival in horse breeding activities is very clearly illustrated by the fact that the number of stallions licensed to travel in the current year—515—is the largest on record since 1926, when the total was 516. This year's total represents an increase of 26 from last year, and compares with 457 in 1933, 418 in 1932, 425 in 1931, 420 in 1930, 434 in 1929, 436 in 1928 and 475 in 1927.

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According to a statement issued by the Northern Ireland Ministry of Agriculture, in the past seven or eight years horse breeding has shown definite signs of improvement in Northern Ireland, a fact which is reflected in the increasing number of mares which are being mated with premium stallions each season. The returns furnished to the Ministry indicate that 2,034 mares were served in the year 1927 by premium stallions, while in 1934 the number was 3,333, an increase of over 63 per cent. The view expressed that horse breeding is on the upgrade is further supported by the fact that although the standard required for a licence has been maintained, there is an increase in the past ten

years in the number of licensed stallions of over 52 per cent.—186 in 1935 as against 122 in 1925. The demand for horses is increasing and prices are reported to be showing a decided improvement.

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BOVINE TUBERCULOSIS ERADICATION ALLOWANCES

In order to correct any misapprehension concerning the above which may have been caused in the minds of our readers in consequence of the insertion of the words "per annum" instead of the words "per herd test" in the note relative thereto published in our issue of August 10th—for which error we apologise—we reproduce below the reports given in *The Times* and *The Daily Telegraph* respectively, of Earl de la Warr's important announcement in the House of Lords:—

The Times: "Earl de la Warr, Parliamentary Secretary to the Ministry of Agriculture, said it had to be admitted that from the beginning the average farmer was not really able to take up the attested herds scheme. The Ministry were therefore putting forward proposals for altering the scheme which were not yet in final form as various interests had still to be consulted. In addition to the bonus of 1d. per gallon on milk from attested herds sold through the provisions of the Milk Marketing Scheme, it was proposed to offer additional financial assistance to herd owners in suitable cases. To assist owners of "supervised herds" the Ministry would be prepared to make contributions from £3 to £5. It was estimated that in the case of the average herd of, say, 20 milking cows, the average contribution would be £38, and on the assumption of eight reactors the cost would be £32."

The Daily Telegraph: "Earl de la Warr, Parliamentary Secretary, Ministry of Agriculture, replying to Lord Cranworth, said the attested herds scheme was not really being taken up or able to be taken up by the average farmer and it had become increasingly obvious that he should be enabled to come in. The Government had decided to put forward certain proposals for altering the scheme.

"In addition to the bonus of one penny per gallon for milk from attested herds sold through the provisions of the milk marketing scheme, it was proposed to offer additional financial assistance in suitable cases.

"Where an owner could produce veterinary certificates showing that he had reduced the number of reactors to the tuberculin test in his herd to not more than 10 per cent. the Minister would be prepared to consider applications for contributions for further tests of the herd up to a maximum of four tests in order to assist the owner to complete the eradication of disease and to enable him to qualify for attestation.

"The contribution would be at the rate of one guinea per herd plus half-a-crown for each animal tested in respect of each complete herd test.

"It was estimated that in the case of an average herd of 20 milk cows the amount of contribution towards the cost of testing would be £38, and for the replacement of reactors £32, bringing the total additional financial assistance afforded up to about £70."

It should be noted that the scheme is *sub-judice* pending the consultation of the Ministry with the various interests and bodies concerned, one of which is the National Veterinary Medical Association.

INSTRUCTION IN MILK PROCESSING AND CONTROL

The City and Guilds of London Institute has recently drawn up a syllabus of instruction for those wishing to hold responsible posts in milk-processing plants. If the demand proves sufficient it is proposed to institute a two-year course, in different parts of the country, candidates for the full technological certificate of proficiency being required to attend twice a week for two hours at a time during the usual school sessions and to pass an intermediate examination in chemistry, physics and microbiology, and a final examination (to be taken in two parts) in milk processing and the manufacture of milk products, excluding butter and cheese, together with the chemical and bacteriological control of milk and milk products. Details may be obtained from the Superintendent, Department of Technology, City and Guilds of London Institute, 31, Brechin Place, South Kensington, S.W.7.

It is suggested in *The British Medical Journal*, that there is some doubt as to whether adequate attention has been paid to the necessity for a knowledge of the risks of contamination of milk with pathogenic organisms of human origin before entry and during passage through the plant, but the drawing up of the syllabus is a step in the right direction, and it is to be hoped that this attempt to increase the technological control of processing plants will be successful.

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DURHAM COUNTY AND THE ACCREDITED MILK SCHEME

With the introduction of the Accredited Producers' Scheme, prepared by the Milk Marketing Board after consultation with the County Councils Association and the Association of Municipal Corporations, the Durham County Council have decided to appoint a joint special sub-committee, consisting of an equal number of representatives from the Health, Diseases of Animals, and Agricultural Education Committees, for all purposes of the Scheme. The sub-committee is to be known as the Milk and Dairies Joint Sub-Committee, and it will deal with all matters arising out of the Milk and Dairies Acts and Orders. The County Council have also decided, with the approval of the Minister of Agriculture and Fisheries, to appoint an assistant to the Organiser of Agricultural Education in order to facilitate the operation of the Accredited Producers' Scheme.

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CONSUMPTION OF MILK: THE SOCIOLOGICAL ASPECT

Two recent enquiries made in Cardiff and the distressed areas of South Wales by the Department of Agricultural Economics of Aberystwyth University College are referred to in *The Lancet* of August 10th, as being of particular interest because, though comparisons are frequently made between the quantities of milk consumed in different countries, little is known about the use of milk in different social classes and the form in which it is purchased.

In the former of these investigations, taking samples from families grouped roughly as good middle class, good working class, new housing area and poor working class, the figures revealed the decline of consumption of liquid milk from 0·55 pint per head per day to 0·16 with descent in the social scale, and the reverse process as regards tinned milk (mostly skim). Among the poorer families those with children purchased

less milk on the average than those consisting entirely of adults, and many children received nothing but skimmed milk.

"In the Rhondda Valley there is less distinction of class and less variation in milk consumption. The daily comsumption of liquid milk (including public supplies) over 602 families averages 0·236 pint per person, raised to 0·327 pint when forms of 'milk-stuff,' such as tinned and dried milk (but not cream) are included. As another recent investigation showed, more liberal public assistance and supply of free milk in the Rhondda than in Cardiff seems to be associated with a better state of nutrition in the poor children of the former area."

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LIVESTOCK IN ENGLAND AND WALES

The Ministry of Agriculture's report on the number of livestock in England and Wales, published recently, states that except for the number of pigs, which increased by 14·8 per cent., all classes of livestock were fewer in 1935 than in the previous year. Cattle fell from 6,660,200 to 6,538,600, a fall of 1·8 per cent. or 121,600 less than in 1934. A further increase was recorded in the dairy herd, 2,049,700 being a new high figure for this class. Although the total number of sheep in the country at 16,470,700 showed a small decrease of 56,300 the decline was restricted to ewes kept for breeding and "other sheep" between six months and one year old, larger numbers being returned in the other classes. The total number of pigs (3,811,700) showed an increase of 491,500, the highest yet recorded.

Horses decreased in number by 12,100 to 873,500, but as in 1934 there was an increase in the number of "unbroken horses." There was a decline of 10,300 in the number of horses used for agricultural purposes (including mares for breeding), but the decrease of 13,300 in other horses was actually and relatively greater.

The total number of fowls declined by 3,200,000 (5·2 per cent.) to 58,130,000, thus bringing the figure below that of 1933. Turkeys decreased by 101,000 (12·8 per cent.) to a total of 687,000.

Cattle.	1935.	1934.	*Incr. or decr.*
Cows and Heifers in milk	2,231,000	2,213,900	+ 17,100
Cows in calf but not in milk	382,200	363,900	+ 18,300
Heifers in calf	436,500	417,300	+ 19,200
Other Cattle—			
Two years and above ...	1,008,600	1,041,400	— 32,800
One year and under two	1,313,600	1,369,100	— 55,500
Under one year	1,166,700	1,254,600	— 87,900
Total of Cattle ...	6,538,600	6,660,200	—121,600
Sheep.			
Ewes kept for breeding...	7,120,700	7,308,300	—187,600
Other Sheep—			
One year and above ...	1,775,900	1,702,600	+ 73,300
Over six months and under one year ...	438,600	528,500	— 89,900
Under six months ...	7,135,500	6,987,600	+147,900
Total of Sheep ...	16,470,700	16,527,000	— 56,300
Pigs.			
Sows kept for breeding...	493,900	450,400	+ 43,500
Other Pigs—			
Over two months ...	2,122,800	1,901,300	+221,500
Under two months ...	1,195,000	968,500	+226,500
Total of Pigs ...	3,811,700	3,320,200	+491,500

COUNTY ALLOWANCES: THE "FIXED SUM" PRINCIPLE

With a view to minimising clerical labour in connection with the payment of mileage allowances to officers using their own cars for official purposes, the Dorset County Council have decided to adopt the policy of paying certain officers fixed sums per annum. The two veterinary officers concerned under this scheme will each receive £180 per annum. Diaries are to be kept by the officers for the purpose of showing the journeys undertaken, the mileage travelled and the business transacted, and an insurance policy covering third party risks, including any liability of the Council itself, must be taken out.

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

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THERAPEUTIC SUBSTANCES (SAORSTAT EIREANN) REGULATIONS, 1934

To the Editor of The Veterinary Record

Sir,—I desire to draw the attention of veterinary surgeons practising in the Irish Free State to the provisions of the Therapeutic Substances (Saorstat Eireann) Regulations, 1934, made under the Therapeutic Substances Act, 1932, and which are in force since June 1st last.

Under these regulations, Therapeutic Substances (which are defined in the Schedule to the Act and include vaccines, sera, toxins, antitoxins and antigens) required for use in the treatment of human or animal disease, may be imported to the Irish Free State only on licence granted by the Minister for Local Government and Public Health to the sole accredited agent in the country of a manufacturer of such substance. Research workers may, however, in certain circumstances be granted research licences to import Therapeutic Substances for the purposes of scientific research.

In the circumstances veterinary surgeons before ordering vaccines, sera, etc., for importation should be careful to ascertain that the manufacturer has an accredited agent in the Free State who holds a licence authorising the import of the substances required; otherwise, the parcel will be detained by the Customs and returned to the senders.

It is understood that the following agents have already been accredited for the importation of some of the chief Therapeutic Substances used in veterinary practice:—

Messrs. Fannin & Co., 41, Grafton Street, Dublin.

Messrs. May, Roberts & Co., Grand Canal Quay, Dublin.

Messrs. Evans, Lescher & Webb, 82, North Wall, Dublin.

Copies of the Act and Regulations may be obtained from the Government Publications Sale Office, 5, Nassau St., Dublin, C.2, price 4d. and 1s. 3d. respectively.

Yours faithfully,

J. J. O'Connor,
Hon. Secretary.

The Veterinary Medical Association of Ireland,
August 19th, 1935.